Handbook

The framework, safety and everyday practice

- **Consolidated edition**

Open-source harm-reduction framework. Not medical advice. Use alongside clinical care.

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Consolidated edition

How to use this book

This handbook is a rewritten, consolidated version of the Recovery Kernel series. It merges about 110 overlapping documents into one set of chapters, so each idea appears once and is linked from other places instead of repeated.

Who it is for. People in recovery, their families and sponsors, and clinicians. The main text is plain language. Where a clinician needs detail, there is a "For clinicians" box, and a separate Clinician Brief.

What this book is not. It is not medical advice and does not replace a clinician. It gives no doses and no tapering schedules on purpose. Withdrawal from alcohol, benzodiazepines, Z-drugs, GHB and high-dose gabapentinoids can kill. Never stop these suddenly, and never run your own taper.

If someone is in danger now, go straight to the chapter "Emergencies: what to do now", call 911, or call or text 988 for suicidal thoughts. Numbers in this book are US numbers; outside the US, use your local emergency and crisis services.

Evidence labels

The Kernel mixes well-established medicine with its own ideas. To keep that honest, claims about genetics, supplements, peptides, predicted outcomes and other less-certain material carry a label:

Label	Meaning
[Established]	Widely accepted clinical fact
[Emerging]	Plausible, with limited or mixed evidence
[Kernel hypothesis]	The Kernel's own framework or projection, not tested in trials

Text with no label is practical advice or well-established basics. Percentages in the Kernel's case studies are projections, not trial results.

What is in the set

1.**The Handbook** (this book): the framework, safety rules, foundations, identity work, and material for supporters. 2.**The Reference Library:** one chapter per substance or behavior. 3.**The Practice Toolkit:**

practical protocols for sleep, food, movement, money, work and more, plus a facilitator toolkit for groups. 4.**The Clinician Brief:** a short, evidence-labelled summary for prescribers and pharmacists. 5.**Editor's notes:** what was changed, which errata were resolved, and what still needs checking before wider distribution.

PART 1. THE FRAMEWORK

What the Kernel Is, and Why Willpower Is the Wrong Tool

> **In this chapter:** The Recovery Kernel is a way of understanding addiction as a biological problem with a biological message in it, not as a character flaw. This chapter explains the idea, what it does and does not claim, and why "just try harder" so often fails. This handbook is US- centred (911, 988, US pharmacies and laws).

The core idea

The Kernel's starting point is simple: **the substance or behavior was a signal, not a sin.** Something was wrong, and the brain found something that seemed to fix it. Recovery means finding out what the problem was and fixing it in a way that does not cost you your life.

The original books describe this with an engineering picture. They call it "hardware versus software": if the brain's chemistry is short on supply, slow to clear stress, or processes drugs unusually, then advice aimed at character ("want it more") is aimed at the wrong layer. You can use the picture or skip it. The practical points are:

- Craving has causes you can investigate.
- Relapse is information about what was left unaddressed, and also a medical risk (see "A break is not a reset" in the biology chapter).
- Understanding the mechanism does not erase responsibility for harm done. It changes the question from "why am I so weak?" to "what does my system need?"

Why willpower fails, in plain terms

Willpower depends on the front of the brain (the prefrontal cortex), which plans, weighs consequences and says no. After long heavy use or long stress, three things tend to happen together [Established, in broad outline]:

- **The reward system blunts.** Normal pleasures feel flat. The substance seems to be the only thing that works.

- **The stress system gets louder.** Anxiety, irritability and dread run in the background and only the substance quiets them.
- **The planning brain gets quieter.** Under chronic stress, the alarm centre (amygdala) makes more of the decisions.

Asking someone in that state to rely on willpower alone is asking them to use the tool that is least available. This is why the Kernel puts **medical safety and biology first**, and behavior and meaning after.

Old picture	Kernel picture
Addiction is a choice or a character failure	Addiction is a learned survival response to distress the brain could not resolve any other way
Effort alone should work	Effort works better once sleep, safety, medication and chemistry are addressed
Relapse means you did not try	Relapse means something was missing from the plan, and a lapse is also a medical risk
One program fits everyone	People differ; treatment should be matched to the person

What the Kernel does and does not claim

It claims: craving is a message; biology matters; treatment should fit the person; recovery is built, not just endured.

It does not claim:

- That any gene causes addiction. Variants are associated with risk in some studies. They are not destiny.
- That genetic testing replaces clinical judgment. At most it informs it.
- That supplements work for everyone, or that any intervention is safe for everyone.
- That this framework is a complete treatment. It is one lens. The strongest recovery plans combine medical care, medication where appropriate, therapy, peer support and daily- life change.
- That the author's own results are trial results. The books grew out of one engineer's long personal experiment with his own recovery, read alongside published research. Treat the framework as a source of questions to take to clinicians.

KEY POINTS

- Craving is a signal; find what it is about.
- Willpower is least available when you most need it, so build safety and biology first.

- The Kernel is a lens, not a complete treatment, and not medical advice.
- Understanding is not an excuse, and it is not a verdict.

The Signal Frame: Reading Craving as a Message

> **In this chapter:** The "signal frame" is the Kernel's central habit of thought. It explains why a substance felt like a solution, why that memory is so strong, and how to turn craving into useful information instead of a verdict on yourself.

The first calculation

Picture a brain with a persistent deficit: constant distress, numbness, noise or flatness. The first time a substance lifts that, the brain does a calculation that is rational from its own point of view:

1. Distress detected, persistent and unresolved.
2. Solution tried: the substance.
3. Result: relief, strong and fast.

The brain does not record "this will make the problem worse later." It records "this worked." That memory is stored at a survival level. Willpower is being asked to override it, and for a brain that still has the deficit, that is a bad trade.

Many people describe their first experience of a substance as feeling *normal*, not high. That is a clue. It often means the substance was treating something. The Kernel calls the original problem "what it was treating."

Questions the signal frame asks

When craving or a lapse shows up, ask instead of judging:

Ask	Examples of what the answer might be
What was I feeling just before?	Anxiety, boredom, loneliness, pain, shame, exhaustion
What did the substance do for me? Ask	Quiet, energy, sleep, numbness, social ease, Examples of what the answer might be confidence
What else in my life provides that, or could?	Sleep, exercise, treatment of anxiety or ADHD, a person to call, structure, a purpose

Ask	Examples of what the answer might be
Is something medical going on?	Poor sleep, untreated depression, ADHD, trauma, pain, a medication problem
What is the risk right now?	Tolerance after a break, unknown supply, mixing, being alone (see The 12 Safety Rules)

The Kernel's wider term for the real-life answers to these questions is the **natural architecture**: the sleep, movement, food, relationships, work and purpose that give your brain what the substance was borrowing.

Responsibility stays

The signal frame is not an excuse. It does not cancel harm done to others. It does not mean "my genes made me do it." It means you can stop spending energy on self-punishment and put it into finding and fixing the cause. Making amends and repairing relationships are part of recovery (see the chapters on family and relationships).

If X, do Y

- **If a craving hits:** name what you were feeling in the last hour. Do one thing that addresses it (food, water, movement, a call, sleep). Craving rises and falls in waves; most pass.
- **If you lapse:** treat it as information and as a medical risk. Your tolerance may be lower than you think. Make sure naloxone is nearby if opioids are involved. Tell someone. Then ask the questions above.
- **If you notice shame taking over:** that is also a signal. Shame drives hiding, and hiding raises risk.

KEY POINTS

- A substance that felt like relief was probably treating something real.
- Replace "what is wrong with me?" with "what was it doing for me?"
- The aim is a life that supplies what the substance used to supply.
- A lapse is information and a medical risk.

The Biology of Craving and the Brain

> **In this chapter:** A plain tour of four systems the Kernel emphasizes: the brain's reward and stress circuits, chemical supply, chemical clearance, and how your body processes drugs. Each section is marked with how strong the evidence is. None of this requires testing in order to start getting help.

Evidence labels used in this handbook: [Established] widely accepted clinical fact. [Emerging] plausible, with limited or mixed evidence. [Kernel hypothesis] the Kernel's own framework, not trial-tested.

1. Reward, stress and the planning brain [Established]

Long-term use changes three circuits (see the first chapter):

- Dopamine receptors become less responsive, so ordinary things feel flat. This is sometimes called reward deficiency.
- The stress circuits become more reactive, so you feel worse when the drug wears off.
- Executive control weakens under chronic stress.

These changes can improve with time away from the substance, sleep, exercise and treatment, but not overnight. Expect weeks to months for the first big gains (see The Recovery Arc).

2. Supply: methylation and the MTHFR gene [Emerging]

Your body builds mood chemicals such as serotonin and dopamine using B vitamins, folate and a process called methylation. MTHFR is a gene for an enzyme in that chain. Common variants (C677T, A1298C) lower the enzyme's activity. The T/T version of C677T is found in roughly 10 to 15 percent of people of European ancestry and more in some other groups.

The Kernel's idea is that a "throttled" supply could leave some people short on the raw materials for mood chemistry, so substances feel like relief. What is known and not known:

- [Established] The variants exist and are common. Many carriers have no symptoms. Major medical genetics groups do not recommend routine MTHFR testing for most people.
- [Emerging] Some studies link MTHFR variants with depression, and L-methylfolate has been studied as an add-on for depression that did not respond to antidepressants. Results are mixed.

- **[Kernel hypothesis]** That MTHFR status drives addiction, or that supplementing it reduces craving by a predictable amount.

Practical notes

- Ask a clinician before supplementing. Dose with your clinician or pharmacist. Folate and B-vitamin products can interact with other medicines, and some people feel anxious or wired when they start too fast.
- If you or a close relative has bipolar disorder, vitamins and supplements that act on mood (for example SAMe and high-dose B vitamins) can trigger mania. Involve a psychiatrist first.
- The book says synthetic folic acid "blocks" the enzyme and must be avoided. This is **[Kernel hypothesis]** and is disputed. Ask your clinician rather than avoiding fortified foods on your own.
- A homocysteine blood test is a cheap, ordinary test. It is an indirect marker only.

A pattern checklist (not a diagnosis). The Kernel suggests that a supply problem may be involved if several of these fit: low mood or anxiety starting in the teens or earlier; antidepressants that helped little; fatigue despite enough sleep; brain fog; frequent headaches; heightened pain; a first use that felt like "normal" rather than "high"; a pull toward depressants. If several fit, **talk to a clinician about depression, anxiety, sleep and thyroid or vitamin levels first**. Those are the common, treatable explanations.

3. Clearance: stress chemicals and the COMT gene **[Kernel hypothesis]**

COMT is an enzyme that clears dopamine and norepinephrine, mainly in the front of the brain. A common variant (Val158Met) changes its speed. The Kernel turns this into two "constitutions," described in The Warrior and the Sage.

The honest picture: COMT is real biology and has been studied in stress, anxiety and cognition, but the link between COMT type and *which substance* a person chooses is not established, and findings in the research are mixed. Use it as a way to think about your own patterns, not as a diagnosis.

4. Processing: how your body handles drugs (CYP450 genes) [Established, mostly]

Your liver breaks down most drugs using enzyme families called CYP450. People differ in how fast.

- **CYP2D6** **[Established]** converts codeine and tramadol into their active forms. Poor metabolizers get little pain relief and side effects. Ultrarapid metabolizers can make dangerous amounts of morphine from standard codeine doses. This is in drug labeling, and codeine and tramadol carry serious warnings for children and breastfeeding mothers. If a prescriber says a medicine "should" have worked and did not, ask whether your metabolizer status could explain it. Being labeled "drug-seeking" when a medicine simply did not work for your body is a real problem.

- **CYP3A4** [Established] processes fentanyl and many benzodiazepines. The practical issue is **other drugs, foods and supplements that slow or speed it**. Grapefruit is a well-known example. Check every new medicine or supplement against an interaction checker or ask a pharmacist.
- **Collisions** [Established] When several drugs use the same enzyme, they slow each other's clearance. Several prescribers, several sedatives, plus alcohol is a classic setup for accidental overdose. Ask one pharmacist to review everything you take.
- **Fentanyl** is cleared mainly through CYP3A4, so CYP2D6 status does not protect you from it.

A wallet card is useful. Write your medications, allergies, any known metabolizer results and emergency contact on a card. Show it to every new prescriber, dentist and emergency team. Testing can help but **never delay starting treatment while waiting for test results**.

5. Receptors and the stress rebound

- **OPRM1 (opioid receptor) and DRD2 (dopamine receptor) variants** [Emerging]**.** Some variants are linked with how people respond to opioids and to naltrexone, and with lower dopamine receptor density. Evidence is mixed. Use them as ideas to discuss with a specialist.
- **Stress rebound [Established, in outline].** After long opioid, alcohol or benzodiazepine use, the stress system can overshoot when the drug stops. This can feel like terror with no cause, racing heart and insomnia. For alcohol and benzodiazepines, withdrawal can cause seizures and can be fatal: **never stop them suddenly; medically supervised only.** Opioid withdrawal is rarely fatal but is dangerous in other ways (relapse and overdose risk). See The 12 Safety Rules.
- **Oxytocin nasal spray** [Emerging]**.** The original books describe it as an experimental way to calm the stress rebound. Small studies are mixed, it is not approved for addiction, and it should only come from a prescriber and a licensed pharmacy. The books' research- peptide route is **not recommended**, because unverified products are not safe. Not for pregnancy, psychosis or heart instability.

6. A break is not a reset

Tolerance falls after days or weeks away from a drug. Cravings and habits do not fall on the same schedule. Returning to a "usual" dose after a break, especially with opioids or alcohol, is one of the most common ways people die. This applies after detox, jail, hospital stays, and even after many years of recovery. See The 12 Safety Rules.

> **FOR CLINICIANS**
>
> - Genetic findings here are hypothesis-generating. Pharmacogenomic testing is most actionable for CYP2D6 and CYP2C19 prescribing decisions (follow CPIC/FDA guidance).

- MTHFR/COMT-based supplement protocols are not guideline-supported. Do not let them delay evidence-based treatment such as medication for opioid use disorder.
- Review the full medication and supplement list for CYP interactions and additive CNS depression.

KEY POINTS

- Craving has biological roots in reward, stress and chemistry, but most genetic claims are hypotheses.
- CYP2D6/CYP3A4 and drug-drug interactions are the best-established, most useful pieces.
- Never use test results as a reason to delay treatment.
- A break is not a reset; tolerance drops fast.
- Alcohol and benzodiazepine withdrawal needs medical supervision.

The Warrior and the Sage

> **In this chapter:** The Kernel sorts people loosely into two "constitutions" by how they handle stress and stimulation: the Warrior and the Sage. **This is a [Kernel hypothesis]**: it is a useful way to reflect on your own patterns and match activities to your temperament, not a scientific classification and not a diagnosis. (Earlier editions called the Sage the "Worrier.")

The two profiles

WarriorSage

Kernel's link to genes COMT Val/Val, fast clearance COMT Met/Met, slow (hypothesis)clearance

Everyday feel	Calm under pressure, restless when things are quiet, needs stakes and novelty	Thoughtful, detail-oriented, strong in calm settings, overloaded by pressure and noise
Under stress	Handles it, then craves intensity	Stress lingers; rumination, anxiety, poor sleep
Kernel's suggested substance pull	Stimulants and intensity (cocaine, amphetamines, heavy caffeine)	Depressants and quiet (alcohol, benzodiazepines, opioids)
Risk when ignored	Boredom, flatness, thrill-seeking	Overload, exhaustion, self-medicating anxiety
Everyone in between	"Balanced" (Val/Met): either pattern may show up depending on stress and circumstances	
Cautions.		

- You can recognize yourself in these descriptions without having the gene variant. Treat it as a temperament map, not genotype → personality → addiction type. The genetic link is unproven.
- Many people are mixed, or change by season of life.
- People often use both stimulants and depressants. Stimulant anxiety followed by a sedative to cope is a common and dangerous cycle.

Warrior: what helps

The Warrior's task is getting enough stimulation, reward and challenge without the substance.

- Intense or competitive exercise several days a week (strength training, intervals, martial arts, team sport), with proper medical clearance and building up gradually.
- Structure, goals and measurable progress; work with real stakes; novelty that is safe and planned.
- Social setting built around doing things together: teams, training partners, goal-based recovery groups.
- Watch out for boredom, solitary slow routines and groups that are only talk. Boredom is a relapse risk and deserves a plan.
- Caffeine and stimulant-like supplements are not a safe substitute. Ask a clinician, especially with heart problems or anxiety.
- If ADHD is part of the picture, treat it properly with a prescriber. Bupropion is sometimes used in stimulant recovery; it is a prescriber's decision (it is not suitable for everyone, for example people with seizures or eating disorders, and it must not be used during alcohol or benzodiazepine withdrawal).

Sage: what helps

The Sage's task is getting enough calm and predictability without the substance.

- Steady, rhythmic movement: walking, swimming, cycling, yoga, pilates, climbing.
- Predictable routines, quieter environments, protected sleep, limited overcommitment. This is a real treatment, not a luxury.
- Breathing practice or meditation; therapy for anxiety (CBT, acceptance and commitment therapy, mindfulness-based approaches).
- Creative or absorbing work: music, coding, gardening, cooking, writing.
- Small groups with shared interests; analytical or skills-based recovery programs (for example SMART Recovery) may suit better than loud, high-pressure settings.
- Caffeine often worsens anxiety and sleep. Consider cutting back.
- Avoid chaotic, competitive, high-cortisol settings as your *main* routine, such as extreme interval training or large crowded social events. They can leave you wired and exhausted.
- Medication for anxiety should be chosen with a prescriber. Avoid sedatives that cause dependence.

When energy is low (any profile)

If you are depleted, with fatigue, brain fog and slow recovery after effort, aim for activity that leaves you better than before you started. Consistent moderate activity beats hard pushes followed by crashes. Walking in nature, easy cycling, swimming and gentle stretching are fine places to begin. Persistent fatigue deserves a medical check (sleep apnea, anemia, thyroid, depression, medication effects).

A simple weekly audit

1.**Name your pattern:** Warrior-leaning, Sage-leaning, mixed, or depleted. 2.**List your current activities.** Mark each as matched (leaves you steadier or energized) or mismatched (leaves you wired, flat or depleted). 3.**Choose one movement, one absorbing hobby and one social setting** that fit, and schedule them. 4.**Track for two weeks.** After each activity note energy, mood and craving (higher, same, lower). Keep what helps; drop what does not.

Combined profiles **[Kernel hypothesis]**

The books describe "stacked" profiles, such as low chemical supply plus slow clearance ("Depleted Sage": overwhelmed, anxious and flat at once, with relief from depressants) or low supply plus fast clearance ("Understimulated Warrior": unmotivated and flat, with stimulants feeling like normal function). They are descriptions of how a person might feel, not tests. The common thread in both is that **treating the person's anxiety, depression, sleep, ADHD and trauma is the first step**, and no supplement fixes those alone.

FOR CLINICIANS

- The Warrior/Sage model is a motivational and formulation tool. It is not a validated phenotype.
- COMT findings in addiction and psychosis risk are mixed. Prefer clinical history over genotype.
- Avoid dopamine-raising supplements (such as tyrosine or mucuna) in anyone with active or recent psychosis.

KEY POINTS

- Warrior and Sage are temperament maps, labeled as a Kernel hypothesis.
- Warriors usually need intensity and structure; Sages need calm and predictability.
- Match activity and company to your pattern, then check how you actually feel.
- Treat the underlying conditions (anxiety, ADHD, depression, trauma, pain, sleep).

The Recovery Arc

> **In this chapter:** A realistic path in three stages: get safe and informed, repair the biology, then build a life that holds. It is a map, not a schedule. Timelines are **Kernel projections**, not trial results, and everyone moves at their own pace. The Kernel's wider names for these stages are **Clarity, Restoration and Manning**.

Rule zero: medical first

Before any framework, stay alive and get safe.

- **Emergency:** call 911. For suicidal thoughts call or text 988. Poison Control: 1-800-222- 1222. SAMHSA helpline: 1-800-662-4357. Crisis Text Line: text HOME to 741741.
- **Alcohol, benzodiazepines, Z-drugs, GHB or high-dose gabapentinoids:** never stop suddenly. Withdrawal can cause seizures and death. Medically supervised only.
- **Opioids:** medication (buprenorphine, including weekly or monthly injection forms, or methadone) is a proven treatment that reduces overdose deaths. Do not wait for supplements, tests or a "biology phase" before starting it. A prescriber decides.
- **Carry naloxone** if you or anyone near you uses opioids or any unregulated pills. Naloxone does **not** reverse xylazine or medetomidine sedation, and nitazene overdoses may need repeated doses. Still give it, and still call 911. Fentanyl test strips do not reliably detect nitazenes.
- **Nothing unverified is safe.** Pills and powders from the unregulated supply can contain fentanyl, nitazenes, xylazine, medetomidine or other adulterants.
- **Psychosis** (hearing or seeing things, extreme paranoia) needs psychiatric care.
- **Serotonin syndrome** (fever, rigid muscles, tremor, agitation, fast heart rate) is an emergency. Do not combine MAOIs, SSRIs, lithium, serotonin-boosting supplements or MDMA without a prescriber. 5-HTP and similar products only on a physician's advice, never with serotonergic drugs.
- **Never mix** depressants (opioids, alcohol, benzodiazepines, GHB). Stimulant plus depressant does not "balance out"; the stimulant wears off first and the depressant is left unopposed. Do not use beta blockers to "come down" from stimulants without a clinician.

Full detail is in The 12 Safety Rules.

Stage 1. Clarity: get safe and understand (first weeks)

- Sleep: aim for a regular schedule. Under five hours a night makes everything else harder; tell a clinician.
- Food and water: regular meals with protein; steady hydration.
- Medical review: bring all medicines and supplements to one pharmacist or prescriber. Check interactions every time you add something.
- Basics of your pattern: read the chapters on the signal frame and the Warrior/Sage maps; fill in your wallet card.
- Ask for the right help: addiction medicine, a prescriber, a therapist, peer support. Tell a trusted person your plan.

Stage 2. Restoration: repair the biology (about months 1 to 6)

The goal is to rebuild the "floor" so effort can hold: sleep, nutrition, exercise, treatment of co- occurring conditions, and where appropriate medication. Typical content:

- **Treat what it was treating:** depression, anxiety, ADHD, trauma, chronic pain. This is usually the biggest single lever.
- **Medication for addiction** where it applies (opioid use disorder, alcohol use disorder, tobacco).
- **Reducing or stopping use** is a medical decision. The books' plan to delay reduction until a supplement phase is "established" should not be read as a reason to delay treatment, and no taper schedules are given here. Taper pace is set by a prescriber.
- **Supplements** are an optional support layer **[Emerging or Kernel hypothesis]**, not the plan. Dose with your clinician or pharmacist; check interactions; avoid during pregnancy, severe liver disease, bipolar disorder or psychosis unless a specialist agrees. Peptides and research compounds: physician-only; unverified products are not safe.
- **Craving and withdrawal-tail symptoms** (poor sleep, low mood, anxiety, flat feelings) can come in waves for months after stopping some substances. They are expected and they fade. Tell your clinician if they worsen or if you have thoughts of self-harm.
- **Movement and rhythm:** matched exercise (see the Warrior and the Sage), daylight, regular meals.

Kernel projection (not a trial result): many people report that sleep and mood stabilize in the first two to three months and that cravings are noticeably less frequent by around month three. Others take longer. Slower is not failure.

Stage 3. Manning: build a life that holds (about months 6 to 12 and beyond)

"Manning" is the Kernel's word for taking the controls of your own life. It means building daily structure and purpose so the substance is not needed:

- Work or study that fits your constitution (stakes and challenge for Warriors; calm and depth for Sages).
- Relationships: repair where safe, boundaries where not; supportive friends; peer groups that suit you.
- Routines for sleep, movement, meals and rest that you could keep for years.
- A written relapse-prevention plan: warning signs, first calls, safe-use rules if you do lapse (naloxone, never alone, reduced dose, no mixing).
- Weekly check-in (below) to catch drift early.

Weekly check-in

Once a week, rate from 1 to 10: mood, energy, sleep, craving, stress. Note supplements or medicines taken, exercise done and anything unusual. Look at the direction over several weeks rather than a single bad day. Share the pattern with a clinician or sponsor. If craving is severe or rising, contact your support person or a clinician first.

Milestones (Kernel projections)

Time	Focus
0 to 3 months	Safety, medical care, sleep, treating what it was treating, building support
3 to 12 months	Biology repair, matched activity, work and relationships, relapse plan
Year 1 to 2	Stability, deeper therapy, purpose, rebuilding finances and trust
Years 3, 5, 10	Maintenance, helping others, reviewing the plan as life changes

These are guideposts rather than predictions. Outcome figures in the original books are the author's projections, not trial results.

For families and supporters

- Learn the signs of overdose and keep naloxone where it can be found. Call 911.
- Help with practical things (rides to appointments, meals) rather than ultimatums.
- Expect setbacks; a lapse needs a medical response, not a lecture.
- Take care of yourself. Support groups for families exist.

FOR CLINICIANS

- Support medical treatment first, evidence-based medication, and co-occurring conditions.
- Treat the Kernel's genetic and supplement material as hypotheses to discuss, and check any supplement for interactions and contraindications.
- Review tolerance changes at discharge, release and after any abstinence.

KEY POINTS

- Medical safety first. Nothing unverified is safe.
- Treat what the substance was treating.
- Do not delay medication or care while waiting for tests or supplements.
- Timelines are guideposts, not guarantees.
- A lapse is information and a medical risk.

Lessons from the Case Files

In this chapter: The original books include 16 short case files about well-known people who died of drug-related causes. This handbook keeps only the repeating lessons. The genetic explanations in those files were **hypothetical and unverified** (no testing was done), so they should not be read as facts about any individual.

Four patterns that repeat

Pattern	What happens	What to do
Tolerance reset	After a period of abstinence (detox, jail, hospital, or years of recovery), tolerance is low. Never use alone. Keep A previously "normal" dose can be fatal. Craving returns faster than tolerance does.	Assume you have lost tolerance. Start far lower. naloxone. Plan for this before discharge or release.
Too many drugs, too many prescribers	Several sedatives, opioids, sleep or anxiety drugs, plus alcohol, compete for the same enzymes and add up.	Use one pharmacy. Ask for a full interaction review. Never take someone else's pills.
Unknown supply	Counterfeit pills or an unusually strong batch; the dose you expect is not the dose you get.	Treat every pill or powder as unverified. Naloxone, drug-checking where available, never alone, tell someone.
Untreated cause	Anxiety, depression, pain or ADHD went unmanaged, so a substance filled the gap.	Treat the cause with a clinician.

Two further lessons: bystanders who cannot recognize an overdose or lack naloxone cannot help, so learn the signs and carry it; and **knowing the danger is not enough** without treatment of what drives use.

KEY POINTS

- Tolerance drops fast; plan for it.

- Mixing and multiple prescribers are common causes of accidental death.
- The unregulated supply cannot be verified.
- Treat the cause, not just the substance.

How to Use This Handbook

> **In this chapter:** Who this material is for, how to start if you are overwhelmed, how to read the evidence labels, and how to use AI tools safely. This handbook is US-centred.

Start here, in this order

1.**Stay alive.** Emergency: 911. Suicidal thoughts: call or text 988. Possible poisoning: Poison Control 1-800-222-1222. Treatment and referral: SAMHSA 1-800-662-4357. Text HOME to 741741 (Crisis Text Line). Alcohol or benzodiazepine withdrawal: get medical care today. 2.**Get the basics.** Sleep, food, water, naloxone if opioids are in the picture, one pharmacist who knows your whole list. 3.**Read The 12 Safety Rules.** Then read the chapter for your substance or behavior in the reference library. 4.**Learn your pattern.** The signal frame, then the Warrior and the Sage, for ideas to discuss with your clinician. 5.**Build slowly.** Use the recovery arc, check in weekly, get help early.

If you are overwhelmed, do only step 1 and step 2 today.

Who this is for, and who needs medical care first

This material suits people who want to understand why treatment has not worked, who are ready to read carefully, and who can work with a clinician. Do not use it as a primary resource if you:

- are in alcohol or benzodiazepine withdrawal (medical emergency);
- have active psychosis or severe instability (stabilize first);
- are pregnant (many supplements are not established as safe);
- have severe liver disease, a seizure disorder, bipolar disorder, or take many medicines (get prescriber or pharmacist review first);
- want a book that gives you a precise treatment plan. It will not.

Evidence labels

Label	Meaning	How to use it
[Established]	Widely accepted clinical fact	Safe to bring to a clinician as a basis for decisions
[Emerging]	Plausible, limited or mixed evidence	Bring as a question
[Kernel hypothesis]	The Kernel's own framework or projection, not trial-tested	Treat as an idea to test with care and monitoring

Untagged text is practical advice or well-established basics. "Kernel projection" means a forecast from the author's framework, not a result from a trial. Phrases like "is associated with" mean a link in studies, not a cause.

Using AI tools

AI assistants can explain terms, help you write questions for your prescriber and summarize interactions. They cannot diagnose, prescribe, or give emergency care, and they can be wrong. Tips:

- Keep a short profile (substances, medicines, known results, triggers) to paste in, but think about what personal health information you share.
- Always check medication or supplement advice with a pharmacist or prescriber.
- In an emergency call 911. In a suicidal crisis call or text 988. AI is not a crisis resource.

Where this book sits in the handbook

- The reference library has a chapter for each substance or behavior family.
- The Glossary explains terms.
- Other chapters cover family and sponsors, relationships, meetings and practical tools.

For families and sponsors

Read this core book's first chapter, The 12 Safety Rules, and The Recovery Arc. Learn naloxone. Offer support without taking on responsibility for someone else's recovery.

> **KEY POINTS**

- Safety first; then biology; then the life you build.
- Use evidence labels to decide how much weight to give a claim.
- The Kernel is one lens among several; keep a clinician in the loop.
- Help is available now: 911, 988, 1-800-222-1222, 1-800-662-4357, text HOME to 741741.

PART 2. HOW ADDICTION WORKS AND

WHAT RECOVERY ASKS

Part 2 — How Addiction Commandeers the Drive, and What Recovery Builds

US-centred. Not medical advice. Crisis: call or text 988. Emergency: 911. This part gives no doses, amounts or timing for any substance. For the shared safety rules see "The 12 Safety Rules"; for emergencies see "Emergencies: what to do now." Evidence labels used here: **[Established]** widely accepted clinical fact; **[Emerging]** plausible, limited or mixed evidence; **[Kernel hypothesis]** the Kernel's own framework or projection, not trial-tested. Untagged text is practical advice or well-established basics.

Chapter 1. The Commandeering Map: how a signal becomes a redose

> **In this chapter** - Commandeering is the moment a normal, partial or delayed feeling is read as "this isn't working," and the answer is to take or do more. - Why it feels so convincing, how it differs by substance, and the non-dose response that works. - It is a pattern in how the brain handles urgent signals. It is not a character flaw.

1.1 What commandeering is

Many medicines and substances are not built to erase a feeling. They bring it down, work on a delay, or peak and fade on their own schedule. The gap is where the trouble starts:

- the ache that is 70% better instead of gone
- the stretch before an edible turns on
- the flat hour after a stimulant peak
- the low after MDMA

That gap is the plan working as designed. Commandeering happens when it is read as failure and answered with more, sooner or stronger than planned.

It repeats because it works in the very short term. Each time the redose "works," the brain trusts the redose over the plan, and the window it is willing to wait shrinks.

The four parts, in every substance and behavior:

Part	What it is	Example
The signal	What the body or mind actually produces	Pain back at a tolerable level; a come-down low
The misread	The story that turns it into failure	"It stopped working." "I didn't take enough."
The dangerous move	Redosing, stacking, topping up or escalating early	Another pill, another bet, another hit

Part	What it is	Example
The correct response	Expect the signal, use a non-dose tool, let the true timeline run	Water, food, a person, a timer, a change of room

[Kernel hypothesis] "Commandeering" is the Kernel's name for pieces clinicians already describe: interdose withdrawal, dose-chasing, steep dose-response warnings for GHB, kindling in alcohol and benzodiazepine withdrawal, and edible overdosing in cannabis. It also covers behaviors where the "dose" is time, money or intensity.

1.2 Why the signal feels so trustworthy

Wanting is not liking. [Established model] Incentive-sensitization research (Robinson and Berridge) describes two separate systems. "Wanting" assigns urgency and pull to a cue. "Liking" is the pleasure actually delivered. Repeated use can inflate wanting while liking shrinks. A cue then fires an old "don't let this slip away" alarm at a volume the real stakes no longer justify.

The Law of the Prey. [Kernel hypothesis] The Kernel pictures the pursuit drive (Panksepp's SEEKING system) in four stages:

1.**Perceived opportunity.** A target registers as available and time-limited. 2.**Rising pursuit.** The chase becomes rewarding in its own right, so craving can feel bigger than the substance ever delivers. 3.**Narrowing.** Attention narrows onto the target and away from cost and consequence. Your values have not changed. The circuit is filtering out distraction while it chases. 4.**Yield or extinguish.** If fed, the system quiets and the pattern is reinforced. If not fed, that cue weakens a little. This is why "ride the wave" works: an urge usually crests and falls in roughly the time of one unfed chase.

"Prey" names what the old circuitry is aimed at, not a verdict on you. The same drive powers curiosity, ambition and love of a hard problem. Recovery does not switch it off. It changes what it is allowed to chase. See the natural-architecture chapters.

Craving borrows the body's urgency wiring. [Emerging] The brain's sensing of internal states (hunger, thirst, a full bladder, craving) appears to share circuitry centred on the insula. Smokers with insula damage from stroke sometimes lost the urge to smoke (Naqvi and colleagues, 2007). That may be why craving feels like a bodily need rather than a preference. Substances also distort the ordinary signals: opioids slow the gut, stimulants mute hunger and thirst, sedatives dull the fight-or-flight response, and withdrawal can turn all of these up. Early on, it is genuinely hard to tell which signal is firing. Ask: *is this hunger, tiredness, threat, boredom, or craving?*

1.3 The comedown is metabolism, not malfunction

A substance feels strong because of how much is active in your body now. As the liver and kidneys clear it, the effect fades on its own schedule. The discomfort is the transition, not proof something is wrong.

What returns is not always a calm baseline. After heavy stimulant use it is a **depleted trough**. After MDMA it is a serotonin low. That trough, not sobriety itself, creates the pull to keep going. Metabolizing and repairing take real resources, which is why food, water and sleep come up so often. Supplements, where used, support a plan; they are not the plan, and doses belong to your clinician or pharmacist.

When the fear system comes back online. As some substances clear (ketamine, methamphetamine and others), the brain's threat-detection restarts on its own. Suspicion or paranoia for a period can be part of this, and sleep loss makes it worse. Expecting it helps. Persistent paranoia or loss of contact with reality needs medical care. See "Emergencies: what to do now."

1.4 What each family does to the signal, and what returning feels like

Each substance mutes, blunts or amplifies a signal. Some do different things at different amounts (kratom behaves more like a stimulant at lower amounts and more like an opioid at higher ones). This is a general pattern, not a diagnosis. For the first three rows, the transition itself can be dangerous and needs medical supervision.

Family	How it touches the signal	What "normal returning" tends to feel like
Alcohol, benzodiazepines, GHB	Calms by boosting the brain's brake (GABA)	Rebound excitement: anxiety, tremor, restlessness, and seizure risk. **Never stop abruptly.**
Opioids (prescription, heroin, fentanyl)	Blunts pain and distress via the body's own opioid system	Flu-like symptoms, then flat mood for longer. Opioids also slow the gut throughout use.
Kratom, 7-OH	Stimulant-like at lower amounts; opioid-like at higher	Mild fatigue (stimulant pattern) or opioid-like withdrawal (heavier use)
Meth, cocaine, crack, cathinones	Amplifies dopamine and energy past the normal range	A depleted trough that can feel worse than plain absence
MDMA	Amplifies connection by releasing stored serotonin	Days of low mood or irritability; the high and the crash are one event
Ketamine, PCP, DXM (higher amounts)	Mutes the sense of self and reality-checking	Odd perception, disorientation, suspicion while circuits recalibrate

Family	How it touches the signal	What "normal returning" tends to feel like
Cannabis, synthetic cannabinoids	Blunts anxiety; amplifies sensory and appetite signals	Irritability, anxiety, appetite change, poor sleep
LSD, psilocybin Family	Loosens the brain's filtering How it touches the signal	Usually settles in hours to days; a minority have longer What "normal returning" tends to feel like perceptual changes (HPPD)
Nicotine	Brief, repeated reward and alertness	Waves of craving and irritability
Caffeine	Mutes the fatigue signal (adenosine)	The masked tiredness, plus headache

Inhalants and poppers do not fit this pattern well. Their main danger is sudden acute toxicity, with no safe amount at any point in a session.

1.5 Commandeering by family: the signal, the trap, the response

Family	The signal	The trap	The correct response
Alcohol, benzodiazepines, GHB	Effect lags behind what is already in the body; anxiety returns between doses	Stacking before the first dose has finished advance. Use a sober arriving (the most dangerous form of commandeering in the series). Taking an unscheduled extra benzodiazepine.	Decide the plan in companion. Bring interdose symptoms to the prescriber. GHB has a very steep dose-response and no antidote, so treat doubt as a medical situation.
Opioids	Pain returns to a tolerable level before the next scheduled dose; "it felt weak"	Self-adjusting; redosing a supply assumed to be weak	Log the pattern and bring it to the prescriber. An unverified supply is uneven, so "weak" tells you nothing. After any gap, tolerance has fallen (see Chapter 3).
Stimulants Family	The come-down, read as "I need it to feel normal" The signal	Redosing to stop the crash. Each peak in a binge is smaller; the crash is not. The trap	The come-down is survived, not solved. Sleep, food, water, a person. The correct response

Family	The signal	The trap	The correct response
Short-acting cathinones	Very fast fade	Chasing the fade; closely spaced redosing raises serotonin-syndrome and heart risk	Move, breathe, call someone. Treat the fade as the end of the session.
MDMA	Opening euphoria fades	"Rolling again." A second dose has less to work with and adds overheating and serotonin-syndrome risk.	Treat the first peak as the peak.
Dissociatives	"Nothing is happening yet" (the drug distorts time and self-assessment)	Pushing past a plateau into a k-hole, delirium or agitation	Decide the plan beforehand; use a sitter. PCP has no reliable relationship between how it feels and how much is on board.
Psychedelics	Onset lag makes "did I take enough?" arrive early	Redosing during the lag, causing a much larger experience	Decide in advance; treat the first hours as waiting, not deciding.
Cannabis	Edibles can take an hour or more to turn on	Redosing before the first has started. Synthetic cannabinoids vary wildly batch to batch.	Wait. Never use "not enough" as information with synthetics.
Inhalants, poppers, chemsex	Repetition with no natural stopping cue	Every repeat carries risk. Chemsex redosing decisions made alone, to keep pace with a session.	There is no safe topping-up. See the Inhalants and Chemsex chapters.
Nicotine, caffeine	A wave of craving; an afternoon slump	Misreading a wave as "the patch isn't working"; stacking late caffeine, which borrows from tonight's sleep	Use directed combinations through a clinician. Cut late caffeine.
Behaviors (gambling, shopping, gaming, sex) Family	The fading return The signal	Chasing losses, bigger Waiting periods, a purchases, longer sessions, riskier The trap encounters	trusted holder of the card or account, a The correct response written boundary.

1.6 Why the street is more dangerous than a hospital, even for the same drug

A hospital measures doses against a shared standard, checked by more than one person. The street has none. The same stamp or source can differ sharply batch to batch.

- **"I've used this amount before" is unreliable.** Your personal calibration depends on a consistent product. An adulterated supply destroys it.
- **A survived massive dose can leave you in a less predictable state.** It forces the body's adaptation on a compressed, involuntary timeline.
- **Test strips and drug-checking services hand back a small part of the missing standard.** They are partial. A negative result never makes an unverified product safe.
- **Nothing unverified is safe.** See the 12 Safety Rules.

1.7 Set and setting set the ceiling too

Where and with whom you use changes how much you use. This goes beyond pharmacology (the idea of set and setting goes back to Zinberg).

- At a club, the risk of being noticed puts a quiet ceiling on amount.
- Alone at home, nothing stops more, because no one can see.
- Your experience in one setting does not predict another.
- Unwitnessed settings deserve more caution, even though they feel safer.

1.8 Hypervigilance: why early recovery can feel like nothing is working

After many substances, the nervous system can stay on high alert. Sounds feel loud, rooms feel unsafe, sleep is light, small frustrations land hard. **[Emerging]** Koob's allostasis ("anti-reward") model is one explanation.

- This is read easily as "treatment is failing." It is more often the expected, time-limited result of a system that must relearn its own baseline.
- A system running hot has less capacity to absorb therapy. If early sessions do not seem to land, that may be why.
- **Name it:** "This is the sensitized-nervous-system stretch, not proof the plan failed."
- **Use the down-shifters:** sleep repair, slow breathing, low-stimulation spaces, grounding.

- **Tell a clinician if it persists.** It can also signal separate anxiety or trauma that needs its own treatment.

1.9 When the substance becomes the hunter

When the substance is removed, the roles can flip. Masked feelings, flattened dreams and numbed sensations return together. People describe it as being hunted, sometimes with a sense of impending doom. That is a real, commonly reported feature of withdrawal from several substances. It is not a sign of permanent damage.

- There is no route around it, only through. Distraction helps an hour; time, support and the nervous system's slow relearning resolve it.
- Re-suppressing it with the substance delays the reckoning.
- A slower, medically supervised taper, where one is appropriate, lets this material surface in smaller waves. The pace is a prescriber's decision.
- Showers, baths, a pool, exercise and unjudging company all help. People who react to visible struggle with disgust add a second stressor. Choose company on purpose.

1.10 Chevronism: when the next step up feels like a rank

[Kernel hypothesis] Tolerance explains why you need more. "Chevronism" (after military stripes) names a second engine: moving to a new method or intensity can feel like an achievement in itself, independent of need. Think joint to bong to concentrates, or oral to nasal to smoked to injected.

Route escalation is one of the best-documented dangerous progressions in addiction medicine. Overdose, infection and dependence risk jump at each step. The question to ask: *do I want the next step because I need more effect, or because it feels like leveling up?* The first is a tolerance and safety conversation. The second is a status or mastery need that wants a legitimate outlet.

Not every deepening is risky. Connoisseurship, craft and culture around a substance can stay flat on the risk curve indefinitely. What matters is whether the step raises real harm: route escalation, redosing to chase a fading effect, or rising frequency and amount.

1.11 Why recovery builds a natural source, not only an absence

[Kernel hypothesis] The Kernel's working theory is that a substance becomes a reliable on- demand switch for two jobs at once: producing the good chemistry (dopamine, endorphins, serotonin, oxytocin) and containing distress. Leaning on an external switch for both can blunt trust in, and access to, the natural systems. That can also reduce capacity for empathy and for staying present with feelings.

So the step after safety and biology is never “just stop.” It is rebuilding a natural source:

- exercise (endorphin, dopamine and BDNF effects)
- real connection (oxytocin)
- mastery and creative flow
- breath and meditation (the stress systems the substance was muting)

The goal is not to white-knuckle a preference. It is for the natural source to become genuinely preferred because it is available, costs less, and delivers on both ends: feeling good and bearing feeling bad. This is the Kernel’s design philosophy. It is not proven superior to other approaches.

What to do, across every substance

- **Know the window before you need it.** Decide “how long before I decide” in a calm moment, with a clinician if medicine is involved.
- **Treat the signal as data, not a verdict.** “Still uncomfortable” is for the next prescriber conversation. It is not permission for more now.
- **Use a non-dose tool for the gap.** Breathing, water, movement, a call, a timer, a change of room.
- **Bring a repeating pattern to your clinician.**
- **A gap in use resets the rules.** The old amount is not the old amount (see Chapter 3).
- **If unsure, treat it as a medical question.** Ask a prescriber, pharmacist, Poison Control (1- 800-222-1222) or 911. The urge cannot tell you.

> KEY POINTS
>
> **Key points** - A normal, partial or delayed signal is misread as failure; the redose is the dangerous move. - Craving is wanting, not liking, and borrows the body’s urgency wiring. - Comedowns are metabolism and recalibration, not malfunction. - Unverified supply and unwitnessed settings remove the limits you think you have. - Hypervigilance and “hunted” feelings in early recovery are expected and pass. - The aim is a rebuilt natural source, not just the absence of the substance.

Chapter 2. The practiced override, and the ways it fails

> **In this chapter** - Getting through an urge is better understood as a practiced skill than as willpower. - Capacity is a dial that rises, not a switch. - The social and circumstantial traps, a table of "signs it may be different now," and what to do when the signal says there is no hope.

2.1 Skill, not willpower

[Kernel hypothesis] Getting through a commandeering moment without redosing, without following the confident stranger, without taking the access that just opened up, looks less like raw willpower and more like a skill. It is practiced repeatedly under real conditions until it is closer to automatic. This is why the Kernel's stage maps move the alternative response from "primary focus" in the first months to "maintenance" by year 3 and a "standing safeguard" later.

The general idea that practice strengthens the systems behind self-control is well supported **[Established]**. Treating each resisted urge as that practice is the Kernel's synthesis. What this changes: a failed moment is not "willpower ran out." It is information about how much practice this specific skill has had. The next step is more practice, more outside structure while the skill is young, or a different route.

A dial, not a switch. The regulatory hardware comes back online gradually (BDNF-supported connections, receptor recovery, stress systems settling). Early on there is less capacity, so the same decision takes more effort, support and structure than it will later. Do not judge month 2 against what year 3 will feel like.

Whose hands are on the wheel. Surrender, a higher power or the group help many people, and nothing here argues against them. In this model, their physiological role is scaffolding: they hold the line on days your rebuilt systems are not yet enough. They are not a replacement driver.

2.2 Disobedience versus avoidance

Two positions sound like safety:

- **Stay away from high-risk settings permanently.** Often the medically correct answer, especially early or with a dangerous substance.

- **Build the capacity to stand in a trigger and decline.** The Kernel calls this *disobedience*: consciously refusing the urge, on purpose, with support, at a pace a clinician or counselor agrees fits you.

Avoidance forever and exposure too soon both let the alarm set the plan. A deliberate, supported decision should set it.

Is this setting really different now, or is the old pull back in a new story? The person inside the moment is the least reliable judge. Use sponsors, sitters and check-ins.

Signs it may genuinely be different	Signs the old pull is back
You have faced this cue on purpose, more than once, with a plan and a witness, and stayed calm	It is the first real test, unplanned, described afterward as "readiness"
A boundary and exit plan was set before you entered (what to order, what to say, when to leave)	The plan is "I'll be fine"

The feeling inside is ordinary, low-stakes ease The old urgency is there under a calm story

A trusted person who knows the history is No one knows you are there present or checks in

You have handled this setting calmly across several occasions	This setting has caused a close call or lapse before

Three things keep a young new default in charge of an old one:

- **Grooming:** repeated, deliberate practice.
- **Moderation:** exposure and pace matched to what you can actually handle now.
- **Governance:** structural friction, accountability and other people.

2.3 Circumstantial commandeering: when the "dose" is doubt

The same shape appears with no substance in the room. The signal is doubt, and the misread is "the plan I'm on must be wrong." The answer is to abandon the plan.

Circumstance	Why it works like commandeering	The better move
Confident advice that contradicts your clinician ("just white-knuckle it," "that medication is a crutch")	Confidence says nothing about whether it fits your biology	Bring it back as a question: "Someone told me X; is that right for me?"
Watching peers use or arrange a relapse in a program or house	One person's relapse is read as proof about recovery; it may also be live access	Tell staff, a sponsor or a clinician the same day. Report it; do not privately debate it.

Circumstance	Why it works like commandeering	The better move
A prescriber who treats a legal drug as inherently safe	Legality changes the label, not the pharmacology	Ask directly: "Let's be careful with this together."
Discharge to the same rooms and people	The environment was holding Rebuild access blocks, structure that is now gone	routines and check-ins for the new setting before a close call
Two trusted people with different philosophies	Disagreement is read as "even experts disagree"	Choose one primary source for your plan (usually your prescriber) and bring the rest to them
A milestone or "graduation"	"I'm done" instead of "one stage done"	Celebrate, then renew the plan for the next stage
A long stretch of confidence	The moment friction feels least necessary and is most often removed	Let confidence change how you feel about the structure, not whether it stays
A new injury, procedure or dental visit	A new prescriber cannot protect you from a risk they do not know about	Tell every new prescriber your history, every time (Chapter 3)
Grief, loss or a major life event	"This is different; I have a real The reason can be real and reason"	the risk the same. Add support; do not make an exception.

Borrowed structure: what a hospital stay can accidentally teach. If you are hospitalized for something unrelated (a fracture, a surgery), you may see coordinated rehabilitation in concentrated form, and then lose all of it at discharge. Two understandable but unhelpful responses follow: trying to replicate everything alone at once on day one, and leaning on repeated admissions as the structure.

- You are not expected to replicate a hospital ward. You were shown the output of a team, not given the coordination.
- Before discharge, ask for a written aftercare plan that names people and check-in points, and ask by name for a discharge planner or medical social worker.
- Start with one or two anchors, usually a medication plan and one accountability contact. Sequencing is what the hospital was doing.

When accountability turns into mockery. Honest, respectful confrontation can be uncomfortable and still leave your dignity intact. Mockery does not. Peers or sponsors sometimes slip into condescension, from status built on tenure, from discomfort with their own unfinished shame, from misapplied "tough love," or from treating recovery as pass/fail. It tends to make people hide struggles and leave. A sponsor relationship is not sacred. If, repeatedly rather than on one bad day, a person's response to your struggle does not leave your dignity intact, seeking a different sponsor or group is information, not disloyalty.

Hospitality. "Mocktail" can signal that you were accommodated after the fact. A good non- alcoholic drink takes real ingredients and craft, and a venue can plan for it in advance. It is fair to ask a host in advance for a proper non-alcoholic option, or to bring your own. The gap is in planning and language, not in the sober guest.

2.4 When the override is harder: biology that slows the skill

[Kernel hypothesis] Genotype does not determine whether you recover. Where biology may make "practice until it sticks" slower, the answer is not more willpower on the same route. Put more weight on routes that do not rely on that biology: medication that lifts the baseline (with a prescriber), removing access, other people carrying part of the load, and a longer timeline. Never delay starting for test results, and clinical history is a better guide than a genotype.

If your profile suggests…	Why practice may be slower	What helps instead or alongside
Slower recovery of learning and prefrontal function (BDNF Met carrier)	Learning by repetition may take longer	Expect a longer timeline; keep access blocks longer; regular vigorous exercise
Slow dopamine and stress clearance ("Sage," COMT Met/Met) If your profile suggests…	Less margin before stress becomes overwhelming Why practice may be slower	Practice calming skills before they are needed; plan for stress triggers; a quieter environment What helps instead or alongside
Fewer D2 reward receptors ("reward deficiency," DRD2 A1)	Holding the line feels less rewarding, so practice is rarely reinforced	Plan explicit rewards for holding the line
Thinner baseline inhibitory tone (GABRA2 high-risk)	The override is partly an act of inhibition	Lean on removing access, medical support and other people; avoid willpower-first
Lower folate-pathway function (MTHFR C677T homozygous)	Flatter mood and shorter fuse under strain	Address it early with a clinician; do not treat a flat baseline as a character issue

[Emerging] The genetic associations above are suggestive at best; several are contested. Use them to build support, not to predict failure.

When the honest target is not full abstinence. For some people, complete permanent abstinence from a given substance may not be a realistic target, at least not soon. Harm reduction asks that quality of life and reduced harm count as success.

- Methadone or buprenorphine maintenance, often long-term, is a success, not an unfinished recovery.
- Dose reduction can be a legitimate goal for some substances.

- Long-term nicotine replacement can be a medication working as intended.

This is a conversation for you and a clinician who knows you. It is revisited over time and is not permanent by default. A target short of abstinence still calls for medical supervision where relevant, honest monitoring and the same safety rules. Only the destination changes.

2.5 When the signal says there is no hope

"It has gone too far to save" is the most dangerous signal in the series. Treat it as a signal to examine, not a fact.

What may be behind it. [Kernel hypothesis] The same prediction machinery behind craving also predicts whether effort will pay off, which is close to trust. A long history of broken promises trains it to predict failure, with confident certainty. That certainty is a trained prediction, not wisdom. It can erode trust in yourself, in other people, and in the future.

Two moves, in this order:

1.**Interception.** If the despair carries suicidal thinking, call or text 988 now and stay with the person. Call 911 for imminent danger. 2.**Redirection.** Supply specific counter-evidence: the dial, not a switch; what is still standing on your milestone tracks (Chapter 3). **"I can't afford the famous rehab."** Most people do not need the most intensive, most expensive level of care. The ASAM Criteria match care to withdrawal risk, other conditions, readiness, relapse risk and home safety. Ask "Can I access appropriately matched care?" rather than "Can I afford the famous option?"

- SAMHSA helpline 1-800-662-4357 and findtreatment.gov
- Community health centers and many state-funded programs, often sliding scale
- Medicaid coverage of treatment (varies by state; ask)
- Outpatient medication for opioid use disorder
- Free peer support (AA, NA, SMART Recovery)

Involuntary holds. Every state has some short-term hold for imminent danger to self or others, with different names and criteria (for example the Baker Act in Florida, 5150 in California). A hold gives safety and a pause; it does not complete recovery and can be frightening. This is rarely a decision to make alone. A crisis line (988), treating clinician or mobile crisis team can help judge whether a less restrictive step (someone staying through the night, an urgent appointment, a safety plan now) fits.

New treatments, graded honestly. Dramatic testimonials are usually sincere, and still one data point.

Approach	State of the evidence	Honest read
Contingency management (rewards for verified abstinence)	Decades of trials; especially strong for stimulants	Among the best evidence in addiction medicine

Approach	State of the evidence	Honest read
TMS	FDA-cleared for smoking cessation	Established for that use; less evidence elsewhere
Ketamine plus therapy for alcohol use disorder	One well-designed placebo-controlled trial found benefit only when combined with therapy	Promising and early; only with a clinician
Focused ultrasound	Small, non-blinded trials; unresolved safety questions	Research only
Deep brain stimulation	Small feasibility trials; invasive	Early; not a general option
Ibogaine	Case series; documented fatal heart-rhythm risk	A real safety risk to weigh directly (see Chapter 3)

2.6 Chemsex: when the signal is fused with the ritual

Chemsex (methamphetamine, GHB/GBL and a cathinone used around sex) fuses the substance with a recurring, partly spontaneous signal: sexual arousal.

- Repeated pairing teaches arousal to arrive through the ritual. That is ordinary conditioning.
- You cannot avoid desire the way you can avoid a dealer. The goal is not the absence of sexuality. It is voluntary, connected, satisfying sexuality.
- It carries an extra social cost: moving from partner-seeking in “party and play” contexts to non-PnP encounters can mean stigma and a smaller pool.
- Without a path, people drift to avoidance of all sexual contexts, isolation, or rigid beliefs (“desire is dangerous,” “arousal is gone for good”). Those cost more in the long run than gradual rebuilding.
- The popular claim of “a sexual thought every 30 seconds” is folk wisdom, not a finding. The best study found a median of about 19 sexual thoughts a day for young men and 10 for young women [Established, single study].
- Most research is on men who have sex with men. Less is known for women and other groups, so the Handbook does not guess.

The step-by-step rebuild belongs in the Chemsex and Compulsive Sexual Behavior chapters.

KEY POINTS

Key points - Early override takes more effort because capacity is a dial that rises. - Neither permanent avoidance nor exposure too soon is automatically safe. Plan, with support. - Doubt, peers, prescribers and milestones can all commandeer a plan. Name them out loud. - Slower biology means more

> structure and time, not more blame. - Hopelessness is a trained prediction. Call 988 first, then rebuild evidence.

Chapter 3. False stability: gaps, new equilibrium, and the tolerance reset

> **In this chapter** - Time off a substance is not the same as being resolved, and an unplanned gap is not a skill. - Years of success are exactly when protection is removed, and a second encounter can move faster than the first. - A lapse resets some tracks, not all of them. How to tell which.

3.1 Vacations, tolerance and tapers

Each dose rises, works and clears, and the body's systems drift back toward baseline. Tolerance is largely what it looks like when that drift is never allowed to finish. Every early redose is also a missed vacation from the substance.

- **Before dependence:** a real break protects against building tolerance.
- **After dependence:** a sudden break is dangerous. For alcohol, benzodiazepines, Z-drugs, GHB and high-dose gabapentinoids it can be fatal (see the 12 Safety Rules).
- **The difference is the dose on the other side.** An unplanned gap followed by the old amount is the danger. A planned, supervised gap followed by a deliberately smaller amount uses the same mechanism safely.
- **A supervised taper is a structured series of small vacations.** The pace is a prescriber's decision. Never self-direct it.

3.2 The tolerance reset after a gap **[Established]**

Any real stretch of reduced or stopped opioid use lowers tolerance within days, whatever the cause: incarceration, hospital detox, residential treatment, a missed supply, or a treatment such as ibogaine.

- A large study of people released from prison found a fatal overdose risk about 129 times higher than the general population in the first two weeks, mostly involving opioids. Similar patterns are documented after inpatient and residential treatment (Binswanger and colleagues, 2007; other cohorts).
- A dose tolerated before can stop breathing afterward.

- **After any gap, treat your tolerance as reset. Never return to a pre-gap amount.** Keep naloxone within reach for well beyond the first days.
- Surviving a nonfatal overdose is among the strongest known predictors of a later fatal one. The risk is mainly what a reversal reveals: an active high-risk pattern, often without follow-up. Naloxone itself does not raise the risk. People who got naloxone and then follow-up care, including medication for opioid use disorder, did better. Treat a reversal as the strongest signal to get follow-up care this week.

Ibogaine carries two separate risks. It is used off-label and outside the US for opioid dependence.

1.**A direct heart risk.** It can prolong the QT interval and trigger a dangerous rhythm (Torsades de Pointes). Deaths are documented, in people with and without known heart conditions. 2.**The same tolerance reset as any successful detox.**

If considering it: ask about an ECG and QT measurement before the session and monitoring during and after, as a separate conversation from relapse risk.

3.3 When the vacation was not a choice

Supply ran out, money ran out, or you were incarcerated or hospitalized. Recovery culture is divided on whether this "counts."

- **The biology does not check intentions.** Tolerance falls on the same schedule either way. Calling an unplanned gap "fake" or a "hidden disease" gets the physiology wrong.
- **What an unplanned gap lacks is the practiced override.** You never met the signal and chose differently, so the skill was never built. That is no failure on your part.
- **When access returns (release, a move, money), you meet low tolerance and low practice together.** That is worse than either alone.

Build the practiced side deliberately, starting now. Do not assume the gap did all the work, or none of it.

3.4 The pain-medicine trap

A common false conclusion: "I went a long time without it, so I wasn't really addicted." Duration and resolution are different measurements. Vulnerability can sit dormant.

The danger is silence. When a doctor later prescribes a pain medicine, you do not mention your history because it no longer feels relevant. The prescriber has no reason for extra caution.

Standing rule: tell every new prescriber and pharmacist about any past period of significant regular substance use, for life, regardless of how long ago or how the gap came about. Decide this once, in a calm moment.

> **FOR CLINICIANS**
> For clinicians: a patient who says their past use "isn't relevant anymore" is not offering reassurance. It is worth exploring gently.

Pain is not one job, and a pill rarely finishes it. Pain tells you to protect the area and helps recruit repair. An opioid blunts the feeling without protecting tissue or repairing it. A numbed area can be overused. Three different situations can all look like "I still hurt, so I still need this":

- Damage too severe for rest alone. It may need surgery or supervised rehabilitation.
- Healing is complete, but the pain system is misfiring (central sensitization, complex regional pain syndrome). This needs specialist diagnosis and targeted treatment.
- **[Established]** Opioid-induced hyperalgesia. Long-term opioids can increase pain sensitivity.

You cannot tell which applies from the inside. Ask for a pain reassessment, ask whether a pain medicine or neurology referral fits, and say out loud to your prescriber that you fear the pain will return. Many people were handed an opioid because it was the affordable, available option. That reflects a care-access failure, not a personal one.

3.5 The "off" feeling: check the body first

After years of stability, a vague "off" feeling can lead to reaching for something. Before treating it as the old vulnerability returning, ask whether it is a real physical problem that something is being used to mask.

- Someone managing undiagnosed pain with opioids for years may discover that a non- opioid anti-inflammatory resolves it far better. The generator was inflammatory.
- **Dental pain** is among the most overlooked. Untreated dental pain is a documented route to long opioid use. Delay can feed the central sensitization above.
- Get a dental checkup, and a medical one. Both things can be true: a dormant vulnerability and a separate physical problem.

3.6 The new equilibrium, and why round two can move faster

Years pass. The friction, access blocks and named signals ease. People forget, not from carelessness, but because years of safety produce forgetting. Often a re-encounter happens because you feel safe.

The body meeting the substance again is neither naive nor simply the old body on pause. It is a **new equilibrium**: stable through real change, not a return to the original. Genetic vulnerability does not reset on any timeline. Some cue reactivity can persist for years. The protective structure is often what the same years dismantled.

The overconfidence trap. [Emerging, serious possibility] Most people anchor on the first time: "it took years, so I'd have time to notice." Re-establishment starting from an already-shaped system can be considerably faster, because pathways are reactivated rather than built. Cue- induced craving can grow before it declines (incubation), and prior exposure can make patterns reactivate faster (kindling, reinstatement). How fast, for any one person, cannot be predicted.

What it depends on: your biological profile, the dose and form of the re-encounter, which circumstantial triggers are present, and how they compound.

What to do: - Treat any resumption as urgent from the start. Do not assume a long runway. - Keep the standing safeguards indefinitely: friction, a check-in person, a medication plan. They are low-effort and never retired.

3.7 A rule you keep yourself versus a rule someone else enforces

People sometimes try, after years of sobriety, to test a new "moderate" rule. Whether that can succeed is genuinely contested.

- Moderation after dependence has real research behind it, generally for people with less severe histories, strong structure and close monitoring.
- Other research and a lot of clinical experience show a high rate of return to severe use, especially after severe, prolonged or biologically driven dependence.
- Neither body of evidence settles any one person's outcome.

The structural point. Imagine two versions of the same rule: "no more than a little, on certain occasions."

- **Version 1:** you decide, in the moment, whether this is an allowed occasion.
- **Version 2:** only another person supplies it, controls when and how much, and you never deviate.

Assume full, good-faith intent in both. They are still not equally reliable. In Version 1 the judge is the same mind the substance acts on. Version 2 removes that failure point. It is not foolproof (a supply-holder can be persuaded or bypassed), but it removes a failure the first cannot. The structure around a decision matters as much as the decision. This is why behaviors and substances in this series ask for a "trusted holder."

3.8 Tabulating a lapse: what is still standing

A single day-count collapses everything true into one number that a lapse resets to zero. A rebuilt relationship, a normal liver panel, a body that relearned sleep and an automatic breathing practice do not vanish. The Kernel uses several tracks instead. After a lapse, ask about each one:

Track	What a lapse typically does	What to name as still standing
Safety and medical	Back toward primary focus; do an emergency check-in. A lapse is also a medical risk (see the 12 Safety Rules).	The prescriber relationship you built
Biology and genome	Usually still standing	Your test results and what they mean for your plan
Cues and triggers	Back toward primary focus; the lapse is new information	What you learned about your own triggers
Natural architecture	Often substantially standing	Exercise, breathing, rebuilt relationships
Underlying condition	Usually standing if treated; tell that clinician, do not abandon it	Medication, therapy, diagnosis
Identity and Manning	Rarely resets; it is information about the moment	The identity work and the people you help

A **milestone** here is a verified capacity that was rebuilt (sleep, a relationship, a lab marker, a skill now automatic). It is not an elapsed-time badge.

A last word on reassurance. Many readers are asked to hold a boundary that others never think about. Needing more structure or support to hold a line that looks effortless for someone else is a harder version of the same problem, not a weaker will. And it is yours to choose your own words (sober, clean, in recovery, or none). No one else decides whether that reflects stigma.

> KEY POINTS
>
> **Key points** - After any gap, tolerance is reset. The old amount is not the old amount. - An unplanned gap gives the biological reset but not the practiced skill. - Tell every new prescriber your history, for life. - A “mystery” off feeling may be physical. Check dental and medical causes. - After years of stability, treat any resumption as urgent. A second encounter can move faster than the first. - After a lapse, tabulate what is still standing; do not reset everything to zero.

Chapter 4. The Trinity: Clarity, Restoration, Manning

> **In this chapter** - The Kernel's replacement for the old "jails, institutions, death" warning: three things that can happen when recovery works. - What each means in practice. - Fifteen case archetypes, in one table. Every outcome figure is a Kernel projection.

4.1 From three destinations to three outcomes

A well-known 12-Step saying names three outcomes of untreated addiction: jails, institutions and death. The Kernel's author lived inside that framework for years and found it kept him afraid, not well. The Kernel offers a different trinity, three things that happen when recovery succeeds.

The old warningThe Kernel's Trinity

What it describes	Destinations for the untreated	Outcomes for people whose care fits their biology
The driver	Fear of consequences	Understanding of how it works
The question	"What happens if I fail?"	"What becomes possible if I succeed?"
Identity	Addict; powerless	"Architecture": your own wiring, not a defect

This is a framing choice. Many people find the 12-Step tradition and its fellowship essential. The Kernel does not ask you to give them up (see the Meetings and Support chapters).

4.2 The three ideas

Clarity: you understand what happened. You understand it as a mechanism, not a story or a moral verdict: the pathways involved, what the substance was treating, and what your brain was calculating. You can stop accepting "character defect" as the explanation. Clarity comes from clinical history, honest self-observation and, optionally, tests. **[Kernel hypothesis]** The Kernel's genotype-to-personality language ("Warrior," "Sage") is a hypothesis, not a diagnosis.

Restoration: your biology is rebuilt. Not just managed or suppressed. Sleep, nutrition, the stress systems and the receptor systems the substance changed get repaired, with clinicians and in a sensible order: safety, biology, then natural architecture. Supplements support the plan. They are not the plan.

Manning: you take the helm. You run your life as the person who understands the system, with a life designed for your wiring, not as someone always bracing against relapse. In the Kernel, *Manning* also names the later stage where someone further along turns around and holds the line for someone behind them (see the Manning chapter).

What the Kernel says it aims to change, in plain terms:

Before	After (the Kernel's goal)
Relapse understood as moral failure	A lapse understood as data and a medical risk, with a specific response
Identity organized around the addiction	Identity organized around who you are and what you are building
Treatment as an endless burden	Treatment with milestones and a direction, plus lifelong standing safeguards
Craving as constant and random	Craving as a signal with identifiable causes
Medications that work poorly	Medicines matched to how you metabolize them, via a prescriber and pharmacist
Supplements forever or not at all	Supplements used with a clinician, with periodic review
Mind occupied by managing craving	More attention for work, creativity and relationships

Not every claim is established. "Homeostasis reached by month 12" and "treatment ends" are Kernel projections **[Kernel hypothesis]**. The 12 Safety Rules still apply for life.

4.3 How to read the case archetypes

The Kernel's case studies are **archetypes**, not real patients. They were assembled from genetic variants and substance patterns "documented in the literature and in the system." They are written to show how the framework thinks.

- **Kernel projections, not trial results.** The Kernel's percentages are estimates for a person who follows a full 12-month protocol with biological confirmation, set against published standard-treatment rates. They are the author's own estimates, and the comparisons are not head-to-head.
- **"70%" does not mean the other 30% failed.** The Kernel reads it as roughly 7 in 10 matching people reaching the stated outcome, and the rest partly improving or needing changes.

- **The genetic story is a hypothesis.** [Kernel hypothesis] Matching a genotype to a person is not established clinical practice. Seizure history, for example, is a clinical finding, not a genetic proof. Gene-environment claims, such as COMT and cannabis psychosis, are mixed in the literature [Emerging]. Clinical history is a better guide than a genotype.
- **No doses, no supplement stacks** appear here. The original cases listed specific supplement and medication amounts. These are omitted on purpose; doses belong to your prescriber and pharmacist.
- **Some pharmacology is worth keeping.** For example, avoiding codeine and tramadol if you are a CYP2D6 poor metabolizer, or buprenorphine not depending on that enzyme [Established, CPIC guidance]. Only a prescriber with your results can apply it.

4.4 Fifteen case archetypes

All “Kernel projection” and “standard” figures are the original document’s own headline 12- month numbers for the first outcome it lists for each case. The standard figures come from the Kernel’s reading of published rates.

What the Kernel says the substance was	Kernel projection vs standard

treating [Kernel Safety point to (headline, 12

#	Archetype	hypothesis]	carry	months)
1	Alcohol: anxious healthcare worker	Anxiety from slow stress-chemical clearance; alcohol as the day’s first quiet	Alcohol taper is medical. Seizure risk.	Abstinence or moderation 72% vs 25%
2	Benzodiazepines : long-term prescribed use	Panic disorder on a vulnerable brake system; years of escalation	Seizure history means supervised taper only. Never self-direct. Gabapentinoid bridges can swap one dependence for another. A cross-taper is a prescriber’s choice.	Taper without ER or seizure 65% vs 15%

#	Archetype	hypothesis]	carry	months)
3	Fentanyl: pain that became a trap	Poor pain relief after surgery from a drug-metabolism mismatch; fentanyl "worked"	Naloxone always; carry a medication card; buprenorphine and naltrexone are prescriber decisions	MAT retention 74% vs 40%
4 #	Cocaine: the exhausted high performer Archetype	Low baseline drive; stimulant "normal" in a What the Kernel says the substance was treating **[Kernel hypothesis]** high-stakes life	Exercise and structure matter as much as Safety point to carry medication; sleep loss; heart risk	Abstinence 65% vs 20% Kernel projection vs standard (headline, 12 months)
5	Methamphetamine: untreated ADHD	Never-treated ADHD with a low-drive profile; meth felt "normal"	Formal ADHD evaluation; treat what it was treating. No dopamine-raising supplements while psychotic.	Abstinence 62% vs 15%
6	MDMA: the serotonin debt	Low serotonin tone and a need for connection; worse crashes	Serotonin-syndrome warnings. 5-HTP only on physician advice and never with serotonergic drugs.	Cessation or large reduction 68% vs 35%
7	Cannabis: anxious daily user	Anxiety self-treatment; withdrawal anxiety returns	Treat the anxiety first. Any CBD "bridge" is a specialist decision (sources disagree).	Cessation or large reduction 65% vs 30%
8	Prescription opioids to street drugs	A patient whose pain was undertreated, then labeled "drug-seeking"	Disclose history; tell new prescribers; avoid fentanyl-contaminated supply	Adequate pain management 78% vs 20%

#	Archetype	hypothesis]	carry	months)
9 #	Ketamine: the trauma survivor Archetype	Interrupting PTSD re-experiencing What the Kernel says the substance was treating **[Kernel hypothesis]**	Trauma-informed care first. Therapeutic ketamine is a Safety point to carry psychiatrist's decision, never self-managed.	Large PTSD reduction at 6 months 67% vs 20% Kernel projection vs standard (headline, 12 months)
10	GHB: the narrow A brake system window	running low; "perfectly calibrated"	No antidote and a steep dose-response. Never stop suddenly; medical supervision only.	Cessation 63% vs 20%
11	Cannabis and psychosis	Anxiety plus psychosis risk with high-potency use	Psychiatric evaluation first. Psychosis means no stimulating supplements until cleared.	Cessation and fewer episodes 70% vs 25%
12	Alcohol: trauma-amplified pattern	Trauma plus a weak brake system; "someone turned off a siren"	Stabilize before trauma processing. Medically supervised alcohol taper.	Sustained reduction or abstinence 58% vs 12%
13 #	Nicotine: eleven quit attempts Archetype	Nicotine as a dopamine and focus lever What the Kernel says the substance was treating **[Kernel hypothesis]**	Choice of varenicline or bupropion and timing is a prescriber decision (the Kernel's sources disagree on which is stronger). Quitting can raise levels of clozapine, olanzapine and theophylline, so tell your Safety point to carry prescriber before the quit date.	Abstinence 67% vs 20% Kernel projection vs standard (headline, 12 months)

#	Archetype	hypothesis]	carry	months)
14	Kratom: chronic pain	Real pain with a metabolism mismatch; kratom was a workable answer with bad delivery	Kratom changes how other drugs are cleared; get an interaction check. Cessation needs a pain plan.	Dose reduction of 50% or more 65% vs 20%
15	Polydrug: reward deficiency	Everything tried, each partially; low reward signal	Needs the full plan; every medication reviewed by a pharmacist; longer than 12 months is normal	Multi-substance cessation 55% vs 8%

What the table does and does not show.

- Most standard baselines are 8-25%, and the Kernel's projections are about two to seven times higher. The Kernel says they apply to "adherent" people with biological confirmation. Adherence and motivation, not biology, may explain much of the gap.
- The Kernel's own text states "the literature citations are real" and "the outcomes are achievable. Not for everyone." The handbook cannot confirm the individual figures.
- Nine other substances and behaviors have no case at all. The Kernel has no projections for them, and the Handbook gives none.
- **Do not use any projection as a prediction about you or someone you love.**

4.5 The Trinity, in a sentence each

- **Clarity:** You have a name for what was actually wrong, and "character defect" is no longer the explanation.
- **Restoration:** The systems the substance changed are being repaired, with clinical help, in order.
- **Manning:** You run a life designed for your wiring, and you help hold the line for others.

"Same people. Different manual." That is the Kernel's line. In the Handbook's words: the old trinity describes what to fear. The new one describes what to build.

> FOR CLINICIANS
>
> **For clinicians** - The case archetypes are teaching devices with author-estimated outcomes. Do not cite them as evidence. Use them to illustrate the idea that undertreated pain, ADHD, anxiety, trauma and sleep problems can drive use. - CPIC guidance supports avoiding CYP2D6- dependent prodrugs in

poor metabolizers. Buprenorphine does not depend on that enzyme. Individual regimens are yours. - Several genotype claims (COMT with cannabis psychosis; GABRA2 inferred from seizure history) are not supported as stated. Use clinical history.

For families and supporters - You do not need to know the genetics to help. Learn the commandeering pattern: a normal, uncomfortable signal read as failure. - Do not read a lapse as moral failure. It is information and a medical risk, so naloxone, a prescriber or an ambulance may be needed. - Treat any hint of hopelessness as urgent. Call or text 988 and stay with the person.

KEY POINTS

Key points - Clarity, Restoration and Manning describe what to build, not what to fear. - The case studies are archetypes with the Kernel's own projections, not trial results. - Genotype- based claims are hypotheses. Clinical history and a prescriber guide care. - No doses or supplement protocols are given in this Handbook. - Nothing here replaces medical care. In an emergency, call 911; for crisis, call or text 988.

PART 3. SAFETY AND EMERGENCIES

The 12 Safety Rules

US-centred. Not medical advice. This chapter gives no doses, taper schedules or step-by-step clinical management. Those belong to a prescriber.

> **In this chapter** - Twelve rules that repeat in nearly every Handbook chapter, stated once here. - Other chapters link here instead of repeating them. - If someone is in danger now, go to “Emergencies: what to do now” or call 911.

Evidence labels: **[Established]** widely accepted clinical fact; **[Emerging]** limited or mixed evidence; **[Kernel hypothesis]** the Kernel’s own framework, not trial-tested.

Rule 1. Medical first

Order of work: safety and supervision, then biology, then the natural architecture that replaces what the substance provided. Supplements support a plan; they are not the plan. Dose any supplement with your clinician or pharmacist.

Rule 2. Never stop alcohol, benzodiazepines, Z-drugs, GHB or high-dose gabapentinoids suddenly

[Established] Withdrawal from these can cause seizures and death. GHB withdrawal can become dangerous within hours. Never stop suddenly after regular use, and never self-direct a taper.

- Tapering is medically supervised, and the pace is a prescriber’s decision.
- A cross-taper to a longer-acting benzodiazepine is one option a prescriber may consider. It is not a rule. Current guidelines favor an individualized, gradual approach.
- Gabapentinoid “bridges” can trade one dependence for another. Whether to use one is a prescriber’s choice.
- This Handbook gives no schedule on purpose.

Rule 3. A break is not a reset

[Established] Tolerance falls within days. The same amount after a break, a hospital stay or release from custody can be lethal. This is the standing danger for opioids, GHB and many stimulants.

- After any gap, treat tolerance as reset and never return to the old amount.
- A planned break with a deliberately smaller restart under medical guidance is different from an unplanned gap followed by the old amount.
- Plan the first 72 hours after any overdose or supervised stay, with medication for opioid use disorder and naloxone in hand.
- See the chapter “False stability: gaps, new equilibrium, and the tolerance reset.”

Rule 4. Nothing unverified is safe

Counterfeit pills, “research chemicals” and powders of unknown content can contain hidden potent drugs. A test result never makes a street pill safe.

- Treat any pill or powder that did not come from a pharmacy with a prescription as possibly containing something stronger than expected. That includes “Xanax” and “Adderall.”
- Fentanyl test strips are a partial tool. They miss other drugs, including nitazenes. A negative is not a guarantee.
- “I’ve used this amount before” is unreliable when the supply changes.
- See “Emergencies: what to do now” for the current supply.

Rule 5. Carry naloxone, and do not use alone

If anyone in your life uses opioids or unverified pills, keep naloxone at home and learn how to give it. One dose is often not enough. Do not use alone. If you are stopping opioids and a sedative may be in the mix, get medical supervision rather than trying at home.

Rule 6. Check every medication and supplement

- **Serotonin syndrome.** [Established] Serotonergic drugs together (SSRIs, SNRIs, MAOIs, tramadol, triptans, DXM, MDMA, cathinones) can cause it. It is an emergency.
- **How your body clears drugs varies.** Liver enzymes (CYP2D6, CYP3A4, CYP2B6, CYP2C19, CYP1A2) change how long drugs last. Tell every prescriber and pharmacist everything you take, including supplements and kratom.

- **Serotonin precursors (5-HTP, tryptophan).** Only on physician advice, and never with any serotonergic drug. Not in the first days after MDMA, DXM or psychedelics. The Kernel's sources give different time windows, so a physician decides timing.
- **Quitting smoking can change drug levels.** [Established] Smoke speeds the clearance of some medicines, so stopping can raise levels of clozapine, olanzapine and theophylline. Tell your prescriber before the quit date. Caffeine also hits harder after quitting.
- **Research peptides** (BPC-157, Semax, Selank and others) are research compounds. Use only with a physician.
- **Prescription products can contain dextromethorphan** (for example some antidepressants). Check before combining with cough medicine.

Rule 7. Sleep is the repair

Late caffeine, alcohol "for sleep," and stimulant-forced wakefulness all borrow against it. Sleep problems after stopping are common and are not a reason to restart. A caffeine caution tag: caffeine can worsen anxiety and sleep for some people (including slow metabolizers), so ask your clinician before using it as a recovery tool.

Rule 8. Waves are expected, not failure

Post-acute withdrawal (PAWS) arrives in windows and waves for months: low mood, anxiety, poor sleep, flat pleasure, craving. It is not a reason to restart the drug. How long it lasts varies, and sources disagree about its length after opioids, so ask your clinician. Tell your team if it persists, because it can also signal a separate condition such as depression or anxiety.

Rule 9. Screen for psychosis

- Psychosis that has not cleared within 48 hours of the last use needs a psychiatrist.
- A personal or family history of psychotic illness is a strong reason to avoid psychedelics and cannabis. [Established for the clinical caution; specific genetic risk claims are mixed, so rely on clinical history.]
- **No stimulating or dopamine-raising supplements while psychotic symptoms are active.** Wait for psychiatric clearance.
- Persistent psychosis is an emergency. See below.

Rule 10. Treat what it was treating, and watch for the mask change

- **Treat what it was treating.** Depression, ADHD, anxiety, trauma and pain were often the real driver. Recovery that skips this holds a gap without filling it.
- **Watch for the mask change.** Quitting one thing often starts another: alcohol, caffeine, nicotine, gambling, shopping, screens. The pattern is the addiction, not the vehicle.

Rule 11. Friction beats willpower, and secrecy keeps it alive

- Block access, delete the app, hand someone the card. Set it up when calm, not during the urge.
- Shame is fuel. Tell someone: a clinician, sponsor, friend or family member. A lapse is not the end of the plan.
- If a peer or sponsor mocks you rather than holding you accountable, it is reasonable to change support.

Rule 12. A lapse is information, and a medical risk

A lapse calls for a same-day conversation, not shame. It may need naloxone, a prescriber or an ambulance. After a lapse, check what is still standing (see “False stability: gaps, new equilibrium, and the tolerance reset”). A lapse resets the cues-and-safety tracks, not everything you rebuilt.

Two habits that go with the rules

- **Be honest about evidence.** The Kernel’s percentages are archetype projections, not trial results. Labels in this Handbook mark which claims are weaker.
- **Do not wait for test results.** Genetic testing, where it helps, refines a plan. It is never a reason to delay starting. If a lab offers “WGBS,” know that whole-genome bisulfite sequencing measures methylation and is not built to call variants such as MTHFR. A standard whole-genome variant file is what a prescriber would ask for. [Kernel hypothesis: the usefulness of genotype-guided plans for addiction is not established.]

KEY POINTS

Key points - Never stop alcohol, benzodiazepines, Z-drugs, GHB or high-dose gabapentinoids suddenly. - After any break, tolerance is lower. Never return to the old amount. - Nothing unverified is safe; naloxone, and never use alone. - Check every medication and supplement, especially anything serotonergic. - Psychosis lasting more than 48 hours needs a psychiatrist. - A lapse is information and a medical risk. Tell someone the same day.

Emergencies: what to do now

US-centred. If someone is in danger, call 911 first. Tell the dispatcher and responders what was taken, if you know. Everything else is second. Suicidal thoughts: call or text 988.

> **In this chapter** - A quick table of emergencies and what to do. - How to give naloxone, and why it does not fix every overdose. - What has changed in the street supply: xylazine, medetomidine, nitazenes. - US resources.

Outside the US, replace these numbers with your local emergency, crisis and poison-control services. Check every number before relying on it.

1. The emergency table

Situation	Signs	Do now
Opioid overdose	Cannot be woken, breathing slow or stopped, pinpoint pupils, blue or gray lips	Call 911. Give naloxone; if there is no response after a few minutes, give another dose. Recovery position; rescue breathing if trained. Stay: naloxone wears off in 30 to 90 minutes. See Section 3 for sedatives that naloxone does not reverse.
Withdrawal from alcohol, benzodiazepines, Z-drugs, GHB or high-dose gabapentinoids	Seizure, confusion, hallucinations, racing heart with chest pain, high fever	Call 911. Never stop these suddenly after regular use.
Serotonin syndrome	Agitation, confusion, fever, fast heart rate, sweating, twitching or rigid muscles, diarrhea (after MDMA, cathinones, DXM or any mix with SSRIs, SNRIs, MAOIs, tramadol or triptans)	Call 911. Name every substance and medication.
Overheating	Very hot skin, no sweating, confusion, rigid muscles (stimulants, MDMA, PCP, cathinones)	Call 911. Cool the person now: cool water; ice at the neck, armpits and groin.

Situation	Signs	Do now
Severe agitation Situation	Extreme agitation, apparent strength, disorientation, little sense of pain, with high body temperature and risk of collapse (PCP, cathinones, Signs methamphetamine)	Call 911 and name the substance. Do not restrain forcefully. Dim, quiet, distance, a calm voice. Remove traffic, water, Do now heights and heat.
Collapse after an inhalant	Sudden collapse or stopped breathing after computer duster, aerosols, butane or solvents	Call 911. Start CPR and use an AED if available. Do not shake or startle them. Do not move them to a car. Never near a flame.
Seizure	Shaking or loss of consciousness (synthetic cannabinoids, withdrawal, tramadol, some cough-cold products)	Call 911. Recovery position. Do not restrain or put anything in the mouth. Time it.
Heart or stroke symptoms	Chest pain, irregular or racing heartbeat, face droop, sudden weakness (cocaine, crack, meth, cathinones, excess caffeine)	Call 911.
Psychosis	Lost track of what is real, voices, commands, persecutory beliefs	Go to an emergency department or call 911, and say which substance. Not cleared within 48 hours of last use means a psychiatric evaluation.
Possible acetaminophen overdose (cold and cough combinations)	Often no symptoms for 24 to 72 hours	Call Poison Control (1-800- 222-1222) or go to an emergency department now, before symptoms. Oral supplements are not treatment.
Nitrous oxide	Tingling, numbness or weakness in hands or feet after use	Stop. Ask a clinician for B12, methylmalonic acid and homocysteine tests and a neurological exam. Weakness or unsteady walking is an emergency.
Wild mushrooms	Severe stomach pain, vomiting or liver symptoms after eating foraged mushrooms	Go to an emergency department or call Poison Control.
A frightening psychedelic experience Situation	Terror, panic, paranoia during or after Signs	Quiet, dim, familiar place, one calm sober person, lie Do now down, breathe slowly. Call 911 only for danger or loss of contact with reality.

Situation	Signs	Do now
Thoughts of suicide or self-harm	Any, including after quitting something	Call or text 988. Call 911 if danger is imminent. Stay with the person.

2. Naloxone

What it is. [Established] Naloxone reverses an opioid overdose. It does not reverse other sedatives. It is safe to give if you are not sure, and it does not harm someone who has no opioids on board. In many places it is available without a prescription, but rules vary by state. Ask a pharmacy.

How to give it (nasal spray is the common lay form):

1. Call 911. Say what you think was taken.
2. Give naloxone as the package directs.
3. Place the person in the recovery position, or give rescue breathing if you are trained.
4. If there is no response after a few minutes, give another dose. Keep going. 5.**Stay.** Naloxone wears off in 30 to 90 minutes, and overdose can return. The person needs to be seen by a medical team.

Keep it available:

- Keep naloxone at home if anyone in your life uses opioids or unverified pills.
- Naloxone is available by mail through harm-reduction services (for example NEXT Distro, nextdistro.org).
- Most states have Good Samaritan laws that protect people who call for help. They vary by state, so check yours.
- **Do not use alone.**

> FOR CLINICIANS
>
> **For clinicians.** Surviving a nonfatal overdose is among the strongest predictors of a later fatal one. A reversal is a window to start medication for opioid use disorder, supply naloxone, and arrange follow-up.

3. The changing street supply

Current to the period of the source documents (2026). Public-health bulletins change. This is a warning to check local information, not a treatment guide. Verify current details with your local health department or a drug-checking service.

Overdose deaths have reportedly fallen in recent years. That does not mean the supply is safer. Fentanyl is now often mixed with other sedatives and synthetic opioids, and counterfeit pills made to look like oxycodone or alprazolam can contain them. The person who took it may not know what is in it, and neither may the seller.

Adulterant	What it is	What it changes
Xylazine (“tranq”)	A veterinary sedative that is not an opioid	**Naloxone does not reverse it.** Still give naloxone, because it treats the fentanyl part. Deep sedation can outlast several doses. Call 911 and support breathing. It can also cause serious skin wounds that need medical care.
Medetomidine (“dex,” “rhino A stronger veterinary tranq”)	sedative in the same family, replacing xylazine in parts of the US. The CDC issued a health advisory in April 2026.	**Naloxone does not reverse it.** After naloxone, breathing may return but deep sedation, a very slow heart rate and low blood pressure can persist. Call 911. Its withdrawal can be severe, with dangerous blood pressure and heart-rate swings that have needed hospital care. **Do not try to manage it at home.** Tell clinicians about possible medetomidine or xylazine exposure. Standard drug screens usually miss it.
Nitazenes (a family of synthetic opioids)	Often several times stronger than fentanyl. More than 20 compounds identified by the DEA. Found in counterfeit oxycodone and alprazolam pills and in powders.	Naloxone works but may need repeated or higher doses. Call 911, give more than one dose, and stay. **Fentanyl test strips do not reliably detect nitazenes**, so “negative for fentanyl” does not mean safe.
Other new synthetic opioids	The DEA warned in 2026 that fentanyl and fake pills are increasingly combined with newer synthetic opioids.	Same response as any opioid overdose: 911, naloxone (more than one dose), stay.
What this means in practice		

- Carry naloxone and know that one dose is often not enough.
- Never use alone.
- Treat every pill or powder that did not come from a pharmacy as possibly containing something more potent.

- Test strips catch some things and miss others.
- After any overdose or supervised stay, tolerance is gone. Plan the first 72 hours with medication for opioid use disorder and naloxone in hand.
- If you are stopping opioids and a sedative may be in the mix, get medical supervision.
- Counterfeit benzodiazepines, counterfeit stimulants, MDMA and novel substances carry the same unknown-content risk.
- **Buprenorphine** is one effective treatment. The long-acting form is a weekly or monthly injection (Brixadi); an older 6-month implant has been discontinued. Choosing treatment is a prescriber decision.

4. If you are worried about someone else

- You do not need to be sure what they are using to help.
- Ask what they are taking without accusing. Listen for what the substance was doing for them.
- Treat any sudden confusion, collapse or seizure as an emergency.
- Learn how to give naloxone.
- Partners of people with compulsive sexual behavior or gambling have their own support (COSA, S-Anon, Gam-Anon).
- If someone has died, 988 also answers calls and texts about grief.

5. US resources (quick list)

For the full table see the Resources appendix.

For	Contact
Emergency	911
Suicide and crisis (call or text)	988
Crisis Text Line	Text HOME to 741741
Poison Control	1-800-222-1222

SAMHSA National Helpline; treatment locator 1-800-662-4357; findtreatment.gov

National Problem Gambling Helpline	1-800-522-4700
Free tobacco quit support	1-800-QUIT-NOW

KEY POINTS

Key points - Call 911 first in any emergency, and name what was taken. - Naloxone reverses opioids but not xylazine or medetomidine. Give it anyway and stay. - Nitazenes may need more than one dose; fentanyl strips do not detect them. - Suspected acetaminophen overdose: call Poison Control before symptoms appear. - Thoughts of suicide: call or text 988.

PART 4. FOUNDATIONS

Why the System Failed You

> **In this chapter:** Why addiction care so often leaves people behind, how the words used about addiction shape what happens to people, and what a substance may have been doing for you. It ends with a realistic picture of what getting better looks like.

This book is US-centred. Crisis lines: 911 (emergency), 988 (call or text), Poison Control 1-800- 222-1222, SAMHSA 1-800-662-4357, Crisis Text Line (text HOME to 741741). Evidence labels are explained in the Handbook: is accepted clinical fact, is plausible with limited or mixed evidence, is this framework's own idea, not trial-tested.

You are not broken

Here is the simplest version.

- Brains differ. Some need more stimulation to feel interested in life. Some can't quiet their own noise. Some feel flat unless something is happening.
- A substance often fills one of those gaps. It makes the world feel bearable, or quiet, or switched on.
- That works for a while. Then the substance changes the brain and the gap gets bigger.
- This is a health problem with a biological side. It is not a verdict on your character.

The Kernel's phrase for this is **signal, not sin**: using is a message about an unmet need. It is still a medical risk, and it still deserves care and a plan.

> **FOR CLINICIANS**
>
> **For clinicians.** The Kernel leans on genetic explanations (methylation, dopamine clearance, GABA receptors) for why some people are more vulnerable. Those links are **[Kernel hypothesis]** or **[Emerging]** at best. The stronger, well-supported points are that addiction is heritable, that early adversity raises risk, and that stigma worsens outcomes.

Words that were used against you

Language decides what people feel entitled to do to someone. Stigmatising terms are linked to worse attitudes in clinicians and worse care [Established].

Word	What it hides	Better wording
"Junkie," "addict"	A person with a health condition becomes the condition	"Person with an opioid use disorder"
"Clean" / "dirty" Word	Turns a medical status into a purity judgment What it hides	"Not using" / "using"; "negative" / "positive" test Better wording
"Willpower problem"	Puts the whole failure inside the person	Describes the actual obstacles: biology, trauma, supply, access
"Drug-seeking"	Can mean a person whose medication isn't working	Ask what the symptom is and why treatment failed
"Rock bottom"	Implies help should wait for catastrophe	Help works earlier; nobody has to lose everything first [Established]
"Treatment-resistant"	Blames the patient for a mismatch	"Not yet matched to the right treatment"
"Choice"	Treats a compulsive pattern as a simple decision	Choice is real but is weakened by craving, stress and sleep loss

You may have spent years being called something you did not choose. You can put the name down.

Why consequences land unequally

Substance use disorders occur at every income level. What differs is who absorbs the consequences **[Established in broad terms]**: arrest and incarceration, access to treatment, job protection, child custody, and whether a bad night ends at a private clinic or a county jail.

With money and cover	Without it
Possession charge → lawyer, diversion, record sealed	Possession charge → overloaded public defender, a permanent record
Overdose → private hospital, specialist, follow-up	Overdose → stabilised, discharged in hours with a pamphlet
Drinking at work → employee assistance program, paid leave	Drinking at work → fired, employment gap

With money and cover	Without it
Pharmacogenomic testing when drugs fail	Labelled “treatment-resistant”; more of the same drug
Pain treated with prescribed opioids → medical sympathy	Same pain treated with street drugs → criminal

The Kernel goes further and reads this as deliberate design. You don’t have to accept that reading to see the pattern. Several pressures work in the same direction:

- **Moral framing.** If addiction is a choice, nobody owes treatment.
- **Criminalisation.** Punishment is easier to fund than care, though treatment costs less than the downstream costs of untreated addiction [Established].
- **Rationing.** Few beds and few trained clinicians are a funding choice, not a law of nature.
- **Waiting for rock bottom.** The idea that suffering prepares people for help has no good evidence behind it.
- **Shame.** Stigma keeps people hidden and out of care. Understanding the mechanism weakens shame, and people seek help earlier.

None of this means waiting for society to change. You can be angry and recover at the same time.

What the substance may have been doing for you

Every substance does something. The useful question is not only “why did you start?” but **“what problem found this solution?”** The table lists common answers. The gene links are [Kernel hypothesis]; the needs themselves are real and can be assessed by a clinician.

What you noticed	A need that may have been underneath	What the substance did
Couldn’t sit still or focus	Untreated ADHD	Stimulants gave a baseline, not just a high
Anxious, mind never quiet, couldn’t sleep	Anxiety disorder, chronic stress	Alcohol or sedatives gave the first real calm
Everything felt flat	Depression, low reward response	Stimulants made life feel switched on
Body remembered what the mind tried to forget	Trauma	Substances gave a pause button for an alarm that wouldn’t stop
Sound, light or crowds overwhelmed you	Sensory processing differences	Depressants or cannabis turned the volume down

What you noticed	A need that may have been underneath	What the substance did
Pain no one could explain	Untreated or poorly treated pain	Street drugs worked when prescriptions did not
Reading or school was a daily shame	Learning differences such as dyslexia	The substance lowered the shame and stress of constant effort

The same traits that made you vulnerable often come with strengths. Intensity under pressure, depth of feeling, empathy and refusal to quit a problem are the other side of the same wiring.

What you can set aside, and what you can't

Set aside:

- Shame, and the idea that needing help proves weakness.
- Timelines borrowed from other people ("my cousin got clean in 30 days").
- The belief that people who love you but give bad advice are your enemies. They were handed an old framework. You don't have to argue with them first. Give them the Family Guide if they want to understand.
- The belief that understanding your biology is "making excuses". A person with diabetes isn't making excuses about insulin.

Do not set aside:

- Medical advice about withdrawal, medications and overdose risk.
- The safety rules in this book.
- Honesty about evidence. Many supplement and genetic ideas in this book are not proven. "Unproven" means "limited evidence", not "useless", and it means you should not let them replace treatment that does work.

What hope looks like

This is not a promise. The timeline is a **Kernel projection**, based on typical recovery courses, not trial results. See "Roots and Reversal" for the reasoning and "Getting Started" for a first-steps plan.

When	What you may notice
Weeks 1-2	Possibly nothing obvious; sleep and mood may be rough

When	What you may notice
Weeks 4-6	Sleep begins to change; some mornings feel clearer
Month 3	Mood steadier; cravings shorter; a bigger gap between urge and action
Month 6	A different baseline that others can see
Year 1	You are living a life that fits your wiring. The substance is less interesting because the need is being met another way

Progress is uneven. A lapse is information and a medical risk (tolerance falls quickly), not proof you failed.

KEY POINTS

- Addiction is a health condition with biological, psychological and social roots. Shame is not treatment.
- Language shapes care. Choose words that describe the problem, not the person.
- Consequences depend heavily on money, race and access, not just on behaviour.
- A substance was usually solving a real problem. Find the problem and treat it directly.
- Hope is realistic and gradual. Recovery is measured by direction, not perfection.
- If despair rises, call or text 988.

Getting Started: A Practical Path

> **In this chapter:** A step-by-step way to begin that works whether or not you ever have genetic testing. It also explains the six "gene systems" the Kernel talks about, with honest evidence labels, and how to use them without letting testing delay care.

The ground rules

1.**Never delay starting for test results.** Genetic tests are optional extras. Treatment, safety planning and support come first. 2.**Never stop alcohol, benzodiazepines, Z-drugs, GHB or high-dose gabapentinoids suddenly.** Withdrawal can cause seizures and death. Contact a prescriber *before* stopping, not after. Medical supervision only. See "The 12 Safety Rules". 3.**Tell every prescriber and pharmacist about every supplement.** Supplements interact with medications. 4.**Medication for opioid use disorder works.** Buprenorphine and methadone cut overdose deaths substantially **[Established]**. Supplements do not replace them. 5.**A break is not a reset.** Tolerance falls quickly. The dose you used before a break can now kill you.

The path

Step	What to do
1. Safety	Check for withdrawal risk, suicidal thoughts, psychosis, or unknown-supply use. Get naloxone if opioids, counterfeit pills or any unknown supply are involved. Call 911 or 988 when needed.
2. Medical review	See a prescriber or addiction clinician. List everything you take, including supplements. Ask for a medication check; if you are about to be prescribed anything psychoactive, ask whether pharmacogenomic testing would help.
3. What was it doing?	Use "Why the System Failed You" to name the need: anxiety, ADHD, trauma, pain, sleep, flatness. Get that need assessed.

Step	What to do
4. Build the floor	Sleep, food, movement, a few safe people, a daily routine. See “Roots and Reversal”.
5. Optional: profile Step	If you want, find out your gene-system profile (below) as a working hypothesis. What to do
6. Taper or stop with support	Only with medical guidance if the substance is one with dangerous withdrawal.
7. Redesign your life	Match activity, work and social life to what you need (stimulation or calm). See “Staying Non-Addicted”.

Getting data (optional)

Test	What it is	Note
Whole-genome sequencing	One-time full read-out of your DNA	Most complete; prices change, check current ones
Consumer SNP array	A selected list of variants from a mail-in kit	Covers some key genes; limited
Clinical pharmacogenomic panel	Physician-ordered drug-metabolism genes	The part with the most established clinical use
Blood markers (homocysteine, B12, folate, vitamin D)	Functional status tests	Reasonable to ask a clinician about

Treat your genetic file like a financial document. It does not change, and it is sensitive. Think carefully before uploading it to any website or AI tool.

If you can’t test, the Kernel’s free self-assessments give a rough working guess. They are **[Kernel hypothesis]**. Use them as conversation starters with a clinician, not as diagnoses.

The six gene systems

System	The Kernel’s plain-language idea	Evidence status
MTHFR (“supply line”)	Slow variant means less active folate for making brain chemicals	Variants are common and real **[Established]**. Their role in addiction and the benefit of “methylfolate for everyone with a variant” are **[Emerging]** to **[Kernel hypothesis]**

System	The Kernel's plain-language idea	Evidence status
COMT ("clearance"): Warrior (Val/Val) vs Sage/Worrier (Met/Met)	Fast clearance means a flat baseline and stimulation-seeking; slow clearance means overload and calm-seeking	Real enzyme variation. The personality and substance-preference story is **[Kernel hypothesis]** and the research is mixed
CYP2D6 ("processing") System	Liver enzyme that handles The Kernel's plain-language idea many opioids and antidepressants	**[Established]**. Poor and Evidence status ultrarapid metabolisers can get no relief or dangerous effects from codeine and tramadol. Clinical testing is useful
GABRA2 / GABRB3 ("brakes")	Weaker inhibitory tone; lower seizure threshold	GABRA2 association with alcohol dependence is **[Emerging]**. GABRB3 and withdrawal seizures is **[Kernel hypothesis]**; a person's own seizure or withdrawal history is a far better guide
OPRM1 A118G	G carriers may need more opioid for the same effect and respond differently to naltrexone	**[Emerging]**, with mixed results
DRD2 Taq1A ("reward deficiency")	Fewer dopamine receptors, so more rewards are needed	**[Emerging]** association; the "needs five or more reward sources" advice is sensible but **[Kernel hypothesis]**

Never treat a genotype as an addiction type or a personality. It is a hypothesis about tendencies, not a prediction about you.

Combined profiles

The Kernel describes combinations such as "Depleted Worrier" (MTHFR plus slow COMT), "Understimulated Warrior" (MTHFR plus fast COMT), "Impulsive Stimulant" (weak brakes plus fast COMT), and "Anxious Depressant" (weak brakes plus slow COMT). These are descriptive labels **[Kernel hypothesis]**. The useful practical reading is simpler:

- If life feels flat and you need intensity, build challenge, exercise and stakes.
- If you are overloaded and anxious, build calm, structure and low stimulation.
- If you can't stop once you start, build external structure and clinician support.
- If medications have never worked right, ask about pharmacogenomic testing.
- If you have a family history of alcohol problems, treat alcohol as a high-risk substance for you.

How the same profile meets different substances

Class	What to think about	Safety point
Stimulants (e.g. cocaine)	Withdrawal is mainly a crash with low mood and anhedonia, which drives relapse	Exercise, sleep, structure. Any medication bridge is a prescriber's decision.
Dissociatives (e.g. ketamine)	Less about who gets trapped, more about comorbidities and physical harm	**Bladder pain, blood in urine or frequent urination needs a doctor, not a supplement.**
Opioid-type (e.g. kratom)	Real physical withdrawal; often began with pain or a prescription	Ask for buprenorphine or MAT by name. Kratom can interact with medications. Slow reductions only with a prescriber.
Alcohol, benzodiazepines	Seizure risk	Medical supervision is mandatory.

Realistic expectations

Standard advice ("exercise improves mood in two weeks", "meditation helps in eight") comes from studies of less-severe populations. After heavy, long use the same things usually work, but more slowly. See "Roots and Reversal" for adjusted timelines. Slow progress is not failure.

Using an AI assistant

An AI tool can help you write questions for a prescriber, check a list for obvious interaction flags, or make a weekly check-in. It cannot prescribe, manage an emergency or replace clinical judgment. If you use one, keep it generic and protect your privacy. Severe craving: reach a person or crisis line first. Suicidal thoughts: 988. Medical emergency: 911.

KEY POINTS

- Start now. Testing is optional and should never delay treatment.
- Safety, medical review and naming the underlying need come first.
- Gene-system ideas are mostly hypotheses. CYP2D6 drug-metabolism testing is the best-established part.
- Alcohol, benzodiazepine, GHB and gabapentinoid withdrawal need medical supervision.
- Slower progress after heavy use is expected, not a failure.

The Braking System and Why You Feel Wired

> **In this chapter:** Why some people can see a bad decision clearly and still can't stop, how alcohol and sedatives can become "the first reliable calm", and why withdrawal from them is dangerous. It also covers ways to steady the nervous system, including grounding.

Emergency box. Seizure, confusion, hallucinations, severe tremor, or fever during alcohol or benzodiazepine withdrawal is an emergency: **call 911 or go to an emergency room.** If you plan to stop, contact a physician *before* stopping.

The idea: accelerator and brakes

Dopamine pushes you toward things. **GABA** is the brain's main "slow down" signal. It helps the thinking brain override an impulse, so a craving can be noticed instead of acted on.

Alcohol, benzodiazepines and GHB work largely by boosting the GABA system. That is why they feel calming and why the brakes can feel absent without them.

The Kernel proposes that some people have naturally weaker inhibitory tone, linked to variants in GABRA2 and GABRB3 genes. The link to alcohol problems has some research support **[Emerging]**. The wider story (a "braking fault" behind many addictions, and the risk percentages quoted in the Kernel) is **[Kernel hypothesis]**. Whether or not you have a variant, the experience below is real.

What weak brakes feel like

- **Impulse overdrive.** You understand the risk and still can't interrupt the urge.
- **Trauma multiplier.** Early adversity and weak inhibitory tone together are linked to earlier and more severe addiction **[Emerging]**.
- **Many substances.** Weak inhibition tends to spread across substances and behaviours, not stay with one.
- **Seizure threshold.** Some people tolerate withdrawal poorly. A past seizure or severe withdrawal is the strongest warning, clinically more reliable than a gene test.

Self-medication and the downregulation trap

1.**The brain notices** a noisy, high-impulse inner state. 2.**A substance fixes it.** Alcohol or a benzodiazepine finally gives the "stop" signal. The first drink often feels like the first normal breath, not a high. 3.**The brain records "this worked."** That is a sensible judgement with a costly result. 4.**Adaptation.** The brain reduces its own braking to compensate. This is tolerance. 5.**Withdrawal.** Remove the substance and the already-weak brakes are weaker still while the excitatory system runs unopposed. The result can be tremor, seizure, delirium tremens and death. **Do not stop alcohol, benzodiazepines, Z-drugs, GHB or high-dose gabapentinoids suddenly.** Supervised care is the correct treatment, not a sign of weakness. Taper plans and any cross- taper or bridging medication are a prescriber's decision.

A quick screen (not a diagnosis)

This list is a **Kernel screening idea**, not a validated test. Count the statements that are strongly true for you.

Impulse and anxiety

- Once a craving starts, I can't interrupt it even when I know it's a bad idea.
- I often make choices I know are poor, and the knowing doesn't stop me.
- Alcohol, sedatives or cannabis make me feel "finally calm" in a way nothing else does.
- Inner noise or anxiety rarely quiets on its own, and I struggle to sleep without help.
- Stimulation overwhelms me and I recover slowly.

History

- I had adverse childhood experiences.
- A parent or sibling had alcohol dependence.
- I started drinking or using much earlier than my peers, and it felt more calming.
- I blacked out on small amounts.

Seizure and withdrawal

- I have had a seizure or been diagnosed with epilepsy.
- I've had severe withdrawal: tremor, confusion, seeing things.
- A relative had seizures or severe alcohol withdrawal.

Yes answers	What it suggests
0-3	Braking issues are probably not central. Focus on the other parts of the Kernel.

Yes answers	What it suggests
4-7	Likely some involvement. Add the steadying practices below and discuss with a clinician.
8 or more, or any seizure-history item	High likelihood. Talk to a clinician **before** any change in alcohol or benzodiazepine use.

Steadying the system

Work from the bottom up. Medical safety comes first if you use alcohol or sedatives regularly.

Tier 1: Foundations (everyone)

Support	Plain notes	Evidence
Sleep, regular meals, daylight Poor sleep depletes Support	Plain notes inhibitory function	[Established] that sleep loss Evidence worsens impulse control
Magnesium	May help sleep and calm; avoid if you have kidney disease; dose with your clinician or pharmacist	[Emerging]
L-theanine, taurine, glycine	Mild calming effects reported; dose with your clinician or pharmacist	[Emerging]
Oral GABA supplements	Doubtful brain entry; some people feel they help	[Kernel hypothesis]; low priority
Zone-2 style aerobic exercise (conversational pace)	Lowers baseline stress hormones over time	[Established] for anxiety and mood

Check every supplement with a pharmacist, especially if you take sedatives, antidepressants, thyroid medication or blood thinners.

Tier 2: Clinician-led bridges

These are prescriber decisions, never self-started.

- **Gabapentin or pregabalin** are sometimes used in alcohol or benzodiazepine care. They can be misused, especially with an opioid history, and a bridge can swap one dependence for another. Whether to use one is a **specialist decision**.
- **Baclofen** has been used for alcohol use disorder with mixed evidence.
- **Ashwagandha** has some evidence for anxiety, may affect the liver or thyroid, and has direct effects on calming pathways. Tell your clinician.

- Other specialist medications exist; they are not for self-management.

Tier 3: Training the brake

- **Precision movement** (Pilates, controlled yoga, martial arts). Holding control under tension is practice for interrupting impulses [Kernel hypothesis]. People who are high- stimulation seekers often need something more demanding than gentle stretching.
- **Long-exhale breathing** (for example, in for 4, hold briefly, out slowly for longer than the in-breath). The long exhale engages the calming branch of the nervous system [Established]. Daily practice makes it more reliable.

Grounding: getting back into the room

Grounding means returning enough contact with body, surroundings and the present to stay reachable. It is useful early, not just in crisis: at the start of a meeting, after a hard share, before difficult work, during rising activation, after conflict. **What it sounds like:** simple and concrete. “Notice your feet on the floor. Notice the chair holding you. Name three things you can see. Let your breath go out a little longer than it came in.”

Options (people return through different doors):

- Visual: name objects in the room; look at one fixed point.
- Auditory: notice the three furthest sounds.
- Touch and pressure: feet pushing into the floor, hands pressing together, a cold drink.
- Posture: sit upright, drop the shoulders.
- Breath: a longer exhale.

If you facilitate a group:

- Keep your own voice and pace steady. Offer orientation, not performance.
- Offer more than one method. Don’t force one.
- Sometimes the whole room needs it, sometimes one person does. Help one person quietly without stopping the room.
- A cue not working doesn’t mean the person is resistant.

Limits. Grounding does not resolve a psychiatric crisis, a trauma surge or an unsafe situation. If someone is suicidal, psychotic, dissociating severely or at risk, hand off to higher care (988 or 911). Don’t keep pushing a technique once a stronger handoff is clearly needed.

> KEY POINTS

- Weak “brakes” are a plausible explanation for why people can’t stop. The genetics are a hypothesis; the experience is real.
- Alcohol and sedatives can feel like the first real calm, and withdrawal from them can kill.
- A past seizure or severe withdrawal matters more than any gene test.
- Supplements are supporting players. Dose with a clinician or pharmacist, and check interactions.
- Long-exhale breathing, precision movement and grounding train the system and are low risk.

Building Your Safety Net

> **In this chapter:** A harm-reduction plan for people who will be at nightlife events or festivals and may be around substances, or who have used and want to step back before it becomes a pattern. It is not permission and not a way to make unsafe things safe. It is scaffolding, and scaffolding comes down.

Emergency box. Call 911 for unresponsiveness, slow or stopped breathing, seizure, overheating with confusion, chest pain, severe agitation or collapse. Put an unresponsive person on their side. If opioids are possible, give naloxone and still call 911. Poison Control: 1-800-222-1222.

Three layers

Layer	When	Aim
1. Before	Weeks before the invitation is accepted	Decide with a clear head
2. During	At the event	Lower acute risk
3. After	The days following	Recover and review

Layer 1: Decide at the kitchen table

The best decision is made three weeks before, not at the gate.

1.**Know the likely substance profile of the venue or city.** Unknown supply is the main danger (see below). 2.**Know your personal risk list.** Past reactions, family history, medications, heart conditions, seizure history, psychiatric history. If you have a clinical pharmacogenomic result, bring it. 3.**Write a "hard no" list and tell the person you are going with.** Pressure at the venue will make it harder to say. 4.**Pick a tier:** *Not using*, *Reduced and modified* (lower amounts, no mixing, no early redosing), or *Using with full precautions*. Know which before you arrive. 5.**Plan the return:** a way home, a safe place to sleep, and a person who knows your plan.

Higher-risk situations (illustrative, not complete):

If you have…	Why it matters	Evidence
Heart disease or high blood pressure	Stimulants and heat strain the heart	[Established]
Serotonergic medication (SSRIs, MAOIs, some pain drugs)	Serotonin syndrome risk with MDMA and others	[Established]
Slow CYP2D6 or CYP2B6 metabolism	Drugs may last longer or build up	[Emerging]
G6PD deficiency or PDE5 inhibitors (erectile dysfunction drugs)	Poppers can be dangerous: methemoglobinemia, sharp blood-pressure drop	[Established]
Family history of psychosis	Cannabis and psychedelics can trigger episodes	[Established]; the AKT1 gene story is [Emerging] and mixed
ALDH2 variant (common in If you have…	Alcohol flushing and Why it matters	[Established] Evidence
East Asian populations)	acetaldehyde exposure	

The tolerance myth

"I can drink everyone under the table" is not good news. Low response to alcohol is itself a recognised marker of higher risk for alcohol use disorder [Established]. The Kernel also suggests it may reflect a methylation difference, which is [Kernel hypothesis]. Either way, a person who feels less is often taking in more, and organ damage arrives without the warning signal.

Unknown supply

Nothing unverified is safe. Pills, powders and "tested" products can contain unexpected drugs:

- **Fentanyl** in counterfeit pills and in cocaine, MDMA and other powders.
- **Nitazenes** (potent synthetic opioids) in counterfeit pills such as oxycodone and alprazolam look-alikes. Standard fentanyl test strips do not reliably detect them.
- **Xylazine and medetomidine** (veterinary sedatives) in parts of the US supply. **Naloxone does not reverse xylazine or medetomidine.** It still reverses the opioid part. Give it, call 911, rescue breathe. Nitazene overdoses may need more than one naloxone dose. Medetomidine withdrawal can be severe and needs hospital care.

Dated note: the supply changes quickly. Check current local public-health alerts.

What helps: carry naloxone, never use alone, use drug-checking services where legal, treat reagent and strip tests as partial information, not clearance.

Layer 2: During the event

Rule	Why
Eat, and have some salt and sugar	Long dancing and drugs empty energy and electrolytes
Drink water in steady sips; don't force large volumes	Both dehydration and overdrinking (low sodium) have killed people on MDMA
Check your body temperature, not the room's	Overheating is a leading acute danger with stimulants and MDMA. Rest somewhere cool if you feel hot
Wait. Don't redose early	Onset can take well over an hour; early redosing is a common route to overdose
Never combine GHB/GBL with alcohol	Both depress breathing; GHB has a very narrow margin between "pleasant" and "unconscious"; there is no antidote
GHB: stay with people, no one alone Rule	Stimulants hide the sedation signal. Dosing errors are most dangerous late in a long Why event. A sober friend should watch the pattern
Don't numb pain and keep going	Leg cramps and pain are signals of depletion. Ketamine-type pain relief hides it; repeated ketamine harms the bladder. Severe cramps, dark urine or muscle pain need medical attention
Keep your hard-no list active	The decision made at the kitchen table was made with a clear head
Know your friend's plan	A buddy who knows what's planned can act faster

Multi-day events

- Each day starts from a body not yet recovered from the day before, so stress accumulates faster than a single night suggests.
- Later days are often the riskiest: sleep debt, poor food, dehydration, tolerance changes, and impaired self-assessment. Cardiac events and sedative-timing errors cluster there.
- Protect sleep, eat something with protein each day, and consider whether to stop earlier than planned.

- If you restrict food for any reason, the shortfall in protein, salt and calories shows up as low mood, cramps and a harder crash.

Supplements: what to know

Antioxidant, "pre-loading" and recovery stacks are popular in nightlife circles. The evidence is mostly animal or small studies **[Emerging]**, and no supplement makes a drug safe. Doses should be set with a clinician or pharmacist. Some are actively dangerous when combined:

- **5-HTP** with MDMA or any serotonergic drug can cause serotonin syndrome. 5-HTP only on physician advice, never with serotonergic drugs.
- **St. John's wort** interacts with MDMA and many medications.
- **Grapefruit** can raise levels of some drugs.

Food first: proper meals with protein, fruit, nuts, and salty fluids beat most pills.

Layer 3: After

- **First 24-72 hours:** sleep, food, fluids, no more substances, no alcohol "to come down", no stimulants to push through.
- **Low mood** in the days after MDMA or stimulants is common ("Tuesday blues") and usually passes **[Established]**. If it is severe, lasts, or includes thoughts of self-harm, call or text 988.
- **After a long multi-day event,** expect recovery to take longer. Rest, regular meals, gentle exercise, daylight, and people.
- **Plan a break.** The Kernel suggests about 30 days without use after a heavy event, to let sleep and mood normalise **[Kernel hypothesis]**. After a break your tolerance falls: *a break is not a reset.*

Are you "pre-exposed"?

This group has used once or often, but has no dependence, withdrawal, or major consequences, and has begun to wonder. That is a good moment to step back.

Warning signs it has become more (see the substance chapters instead):

- You use to manage anxiety, depression or loneliness.
- The gaps between uses are shrinking.
- You think about the next time more than seems proportionate.
- You use more than planned.
- You feel off when the usual interval passes.

- Relationships or commitments are slipping.

A five-step rescue:

1. Find out what the substance does for you (see “Why the System Failed You”).
2. Treat that need directly: anxiety, trauma, ADHD, sleep, loneliness.
3. Attend two events without using, in a row. The link between a setting and a substance weakens only by repeating the setting sober.
4. Build something that provides the same states by other routes: connection, music, movement, mastery.
5. Lengthen the interval between uses, and track whether it is lengthening or shortening. A shrinking interval is the most important warning.

Ten questions before you say yes

1. Do I know my medical risks, medications and any relevant test results?
2. Do I have a hard-no list, and does my buddy know it?
3. Which tier am I in?
4. Do I have naloxone, ride home, a place to sleep and a recovery plan?
5. What am I hoping the event will do for me?
6. Is there something I’m trying to manage that I haven’t addressed?
7. When did I last attend without using?
8. Is the gap between uses growing or shrinking?
9. Am I relying on a supplement plan as permission?
10. Would I be comfortable telling a clinician exactly what I plan?

KEY POINTS

- Decide ahead of time. The best choices are made away from the venue.
- Unknown supply is the biggest danger. Carry naloxone, but remember it doesn’t reverse xylazine or medetomidine.
- Never mix GHB/GBL with alcohol. Don’t use alone. Heat, sleep loss and late-event errors are the usual killers.
- Supplements don’t make drugs safe and some interact dangerously. Food and sleep matter more.
- A shrinking gap between uses is the signal to stop and look at what’s underneath.

- This plan is scaffolding. If you need it forever, the real question is what the event gives you that the rest of your life doesn’t.

Stopping the Bleed

In this chapter: How to tell whether a recovery tool is a bridge or has become the destination, when it is reasonable to leave a group that isn't helping, and how ordinary activities rebuild reward. This chapter does not tell you to stop any medication.

Warning. If you are in treatment for withdrawal, especially from opioids, benzodiazepines or alcohol, **do not change any medication without a prescriber.** Withdrawal can be medically dangerous. This chapter is about the long arc, not acute withdrawal.

Bridge or destination?

Medication, groups, therapy and supplements are all tools. For each one, ask: *is this building toward something that doesn't require it, with a defined endpoint? Or has the scaffolding become the building?*

Some medications are meant to stay. **Buprenorphine and methadone** are often best continued long term, and stopping them raises the risk of relapse and overdose [Established]. "Long- term" is a legitimate medical decision when it's made on purpose.

The useful move is to have the conversation on day one:

Medication	Why it's used	Questions to ask your prescriber
Buprenorphine or methadone (including long-acting buprenorphine injection, weekly or monthly) Medication	Controls opioid withdrawal and craving; reduces deaths Why it's used	What is our target duration? What would show I'm ready to reduce? What supports should be in place first? If we stay long term, what is the review plan? Questions to ask your prescriber
Antidepressants, anti-anxiety medication	A floor while other supports are built	Is this likely to be long-term or substance-related and temporary? When is our reassessment date?
Sleep medication	Short-term help for early-recovery insomnia	How long? What do I do to help sleep return by itself?

Medication	Why it's used	Questions to ask your prescriber
Naltrexone	Reduces reward from alcohol or opioids during a high-risk period	How long should I use it? Am I a candidate for extended use?

A prescriber who can't state an endpoint or a review date is offering management rather than a plan. Management may be right, but ask.

Correction to a common claim. The Kernel sometimes says that once you've identified the "damaged structures" you probably won't need medication. That is a **[Kernel hypothesis]**. Some post-substance depression and anxiety do ease as the brain recovers, which is a reason to review medications, not to drop them on your own. Never stop a prescribed medicine without your prescriber.

Simple things that work

These are cheap, low-risk and backed by general evidence on mood, stress and reward. The mechanisms below are explained in "Roots and Reversal".

Activity	What it does	Try
Walking (around 30 minutes daily)	Lowers stress hormones, supports mood and brain repair, and gives the mind a rest from craving	A daily outdoor walk, especially in the first 90 days
Goal-directed games (bowling, darts, mini golf)	Short rewarding loops with feedback, with others, no substance needed	A weekly outing
Presence activities (picking flowers, gardening, making a snow angel)	Full sensory attention interrupts rumination	Anything that needs your hands and senses

These aren't gimmicks, and they aren't a replacement for treatment. They are the daily practice of ordinary life.

Groups: stay if it helps, leave if it doesn't

Peer groups such as AA, NA, SMART Recovery or treatment-centre groups help many people. They are one of the best-studied supports **[Established]**. But a group that leaves you worse is not required for recovery.

Signs a group isn't right for you right now:

Sign	What may be going on	What to try
You leave feeling worse, most of the time	Others' stories are triggering you	One-to-one therapy first, or a group with people at different stages
The main content is detailed "war stories"	Hearing detailed use stories can raise cravings **[Emerging]**	A skills-focused, future-focused group
Your identity is reduced to "addict" and nothing else	Identity stays anchored in the A group that supports other problem	parts of you
Attendance produces guilt, not growth	Attendance has become the goal	Judge a group by what it gives you

Peer contagion. Studies, mainly in adolescent treatment, found that grouping high-risk people together can reinforce risk behaviour **[Emerging]**. Whether it applies to adults depends on the group and facilitator.

What good groups tend to have: members at different stages, practised skills, a future focus, strong facilitation, and room for identity beyond the addiction.

You may leave a group that isn't helping. That is choosing a better tool, not giving up. If your group keeps you safe and connected, keep going.

The phase reframe

"I am an addict" is one way to hold the story. The alternative is: *I went through a significant period of substance use. It cost me things and taught me things. It's behind me.* Some people find that "phase" language frees them; others find that a permanent label keeps them safe. Both are legitimate. Choose the frame that helps you stay well. The idea behind "weaponizing" the phase is to use what it taught you: knowledge of drugs and withdrawal, resilience, compassion for others. Peer support, harm reduction work and counselling all draw on exactly that.

Widening your world

- Find **one person** who has built a good life after addiction. Their existence is evidence the destination is real.
- Join communities where you are known for what you do now: a garden, a gym, a band, an animal rescue.
- Read or listen to stories about what people built, not only what they survived.
- If a group keeps the pit more vivid than the destination, notice it and act.

Signs it's working

The return of ordinary delight is a better measure than a symptom scale. Typical markers, with times as **Kernel projections**:

Marker	Timeframe (varies widely)
Food tastes good again	About 1-3 months, depending on the substance
Something genuinely catches your interest	Months
You can be bored without urgency	Months
You laugh without performing it	Often later

If you can lie in the snow and feel the old delight, something good has returned.

KEY POINTS

- Every tool is a bridge or a destination. Decide which on purpose and ask for an endpoint or a review date.
- Some medications are meant to stay. Never stop one without your prescriber.
- A daily walk and simple activities are real support.
- Groups help many; you may leave one that harms you.
- Widen your world beyond people who are at the same stage.
- The return of simple pleasure marks recovery.

Trauma and Substances

> **In this chapter:** How childhood trauma connects to later substance use, why "the drug was never the real problem" is often true, how to sequence trauma work safely, and how substances can also lead to harm of others. It is not trauma treatment.

Caution. This chapter discusses childhood abuse at the level of patterns, not graphic detail. If it brings up more than you expected, that is common and not a malfunction. Crisis: **988** (call or text), RAINN **1-800-656-4673**, Crisis Text Line (text HOME to 741741). Domestic violence: National Domestic Violence Hotline **1-800-799-7233** or text START to 88788. Emergency: **911**.

The principle: the substance as a symptom report

The Kernel's central diagnostic idea is that a substance is a costly, imperfect solution to a real problem, and which substance someone gravitates to is information about the problem. When complex trauma is underneath and only the substance is treated, the alarm it was silencing often gets louder.

This is a pattern, not a rule. Not everyone who uses benzodiazepines has a trauma history, and not everyone with trauma develops a substance problem.

Substance	What it does	What it may be quieting [Kernel hypothesis]
Benzodiazepines	Forced calm	Always-on alarm, panic, hypervigilance
Alcohol, depressants	Numbing, lowered arousal	Anxiety, social threat, overload
Opioids	Total muting	Physical pain, despair
Cannabis	Filters the signal	Rumination, overload
Stimulants	Artificial energy	Exhaustion and the forced "staying on" of a dangerous childhood
Kratom	Low dose stimulating, high dose opioid-like	Either side of the above
Ketamine	Dissociation	Deliberate escape from unbearable memory

Substance	What it does	What it may be quieting [Kernel hypothesis]
GHB/GBL	Near-total sedation	For some, ordinary anxiety; for others, a wish to disappear completely

If GHB use is tied to wanting to disappear, that is closer to self-harm than coping. Treat it urgently and call 988. High-frequency GHB withdrawal is also a medical emergency.

The nightly glass of wine counts too. Alcohol use disorder is heritable [Established], and families often normalise a parent's drinking ("that's how Dad unwound"). A substance doesn't have to look like a crisis to be doing this job. It only has to be reliably reached for.

What complex trauma covers

Single-event trauma can cause PTSD. Complex trauma is repeated, interpersonal and usually early, often by people a child depended on. It adds trouble regulating emotion, a damaged sense of self, and difficulty trusting.

Category	Often missed because
Child sexual abuse	Hidden by the child for decades, if ever
Abuse by an older sibling	Dismissed as "sibling stuff"
Physical abuse (belts, spoons, cords, rage-driven hitting) Category	Culturally normalised as discipline Often missed because
Emotional abuse (humiliation, terror, invalidation)	No marks to point to
Abandonment disguised as provision (nannies, boarding school, a credit card instead of attention)	"You had everything" works as an argument against it

If you thought "everyone got the belt" or "I never went without": that thought is common. Whether something was abuse is decided by what it did to a child who couldn't protect themselves or leave, not by how normal it felt. Being materially provided for and being abandoned can be the same childhood.

Matching trauma and substance (a pattern, not a verdict)

Trauma type	Substance that often becomes the cover [Kernel hypothesis]
Early sexual abuse	Compulsive sexual behaviour, opioids, benzodiazepines
Physical abuse at home	Benzodiazepines, alcohol, opioids
Emotional abuse, invalidation	Alcohol, cannabis, stimulants
Hypervigilance turned into forced achievement	Stimulants including methamphetamine
Trauma with chronic pain	Opioids, kratom
Active escape from memory	Ketamine
Self-harm patterns with a wish to disappear	GHB/GBL
Attachment disruption	Any substance, and compulsive sex, work, or digital escape

The digital mask

Compulsive scrolling is often the trauma's newest disguise, because apps use the same variable- reward design as slot machines [Established]. Ask yourself:

- Is my phone the first thing I reach for, before I notice how I feel?
- Does scrolling make "wired" feelings go quiet, as a sedative did?
- Do I watch trauma or recovery content *instead of* doing the work?
- Do I lose time in a way that feels like checking out?
- Do I choose scrolling over calling someone or going to an appointment?
- Would a week away from the app cause anxiety larger than "it's just an app"?

A few honest yeses mean the same principle applies: it is a symptom report, not a character flaw. Use bounded access, remove triggers, and replace rather than only remove. Don't let it eat the time needed for the real work.

Two timing errors

Error	Why it happens	Correction
Starting trauma processing too early	Wanting to "get to the root" before withdrawal has settled or support exists	Stabilise first (medical, relational, physical). Then process. Starting too early can destabilise and precipitate relapse
Moral inventory without trauma awareness	Standard "my part" work can ask a survivor to find fault in their own victimisation	Separate "harm I caused while using" from "harm done to me as a child". A trauma-informed therapist should guide the second

None of what happened to you was your fault.

This needs a therapist

Education and supplements are not trauma treatment. Therapies with the best evidence for trauma are **EMDR, Cognitive Processing Therapy, Prolonged Exposure**, plus somatic approaches and **Internal Family Systems** (the last two with more limited evidence for complex trauma) **[Established for the first three; Emerging for the rest]**. Ask a prospective therapist what modality they use for complex trauma and how much of their work is trauma-focused. Going slowly is not avoidance.

If therapy isn't available or isn't safe to pursue openly:

- Check local law and privacy before using telehealth across borders. Discussing abuse or family conflict can carry real legal risk in some countries.
- Books are legitimate self-directed work. Common starting points include *The Body Keeps the Score* (van der Kolk), *Complex PTSD: From Surviving to Thriving* (Walker) and *Adult Children of Emotionally Immature Parents* (Gibson). Availability varies by country.
- Reading alone, in private, is still you doing the work.

When substances and harm to others meet

This section is for both sides. If you are in danger now, start with the National Domestic Violence Hotline (1-800-799-7233, or text START to 88788) or call 911. Explaining a mechanism is never a reason the behaviour was acceptable.

Why a substance can unlock aggression

- Alcohol, benzodiazepines and GHB suppress GABA, the same braking system the other chapters describe, so the brake on an aggressive impulse weakens **[Established]**.
- Intoxication and chronic use reduce prefrontal function, which weakens consequence- checking and impulse control **[Established]**.
- Alcohol can cause real blackouts. “I don’t remember” can be true. It doesn’t remove responsibility.
- Stress-hormone disruption shortens the fuse. Anabolic steroids are linked to aggression. Stimulant-induced paranoia can provoke defensive violence. PCP is linked to violence during intoxication.

Two patterns that look alike

Pattern	What it looks like	What helps
Cyclical	Abusive when drinking, genuinely different sober, repeated over years	Sobriety alone does not reliably end it. Both the substance problem and the abuse need direct, separate treatment, including a batterer-intervention program
Single, terrible night	Both people impaired, a real conflict, no pattern of control	Honest reflection, grief, and often a therapist’s help. Don’t assume it’s a pattern, and don’t excuse a pattern as “one night”

Both can also leave moral injury: weight from having harmed someone even while trying to prevent worse. That needs a therapist, not isolation.

Other forms of substance-amplified harm include emotional abuse, financial abuse, revenge, and **self-directed abuse**: stimulants can switch off warning signals (pain, fatigue, fear) so a person damages their own body while feeling powerful.

If you were abusive and want it to stop

- Tell a therapist trained in this, not only an addiction counsellor.
- Substance treatment *plus* a batterer-intervention program is the evidence-based combination. Sobriety is necessary and not sufficient.
- Ask what the disinhibited state gave you (control, an outlet, relief from powerlessness). That need must be met another way.
- Don’t attempt direct amends in an abuse situation. Use a structured program first.
- If you are experiencing urges to harm children or others, seek confidential professional help now.

If you were on the receiving end

- It was not your fault. Understanding the mechanism is not an obligation to accept or stay.
- A partner's sobriety is progress but not a safety guarantee.
- Safety planning comes first. The hotline can help.
- You may protect yourself and any children regardless of the other person's stage of recovery.

For sponsors and family

You are a witness, not a mediator, and you are not qualified to judge whether it's safe for someone to stay. Name what you see and hand it to the hotline or a professional.

The dare: a childhood habit that never retires

Children practise overriding an inner warning ("I dare you"). Adults do too: knowing the likely outcome and betting it will be the exception. Repeated, it stops feeling like a choice. After a crash, forgive **the person** who made the bet. Don't forgive **the pattern**, because surviving once doesn't make the mechanism safe.

- **Gambling** is the dare made chronic. Twin studies show a substantial shared genetic link with alcohol use disorder **[Established]**, a broad inherited tendency toward weak behavioural control. That's partly why casinos serve alcohol. Large losses can feel like their own twisted achievement. If gambling is involved, 988 and the national problem- gambling helpline are available.
- **Social media and monetised content** can run the same loop with an audience and a payout. Performing a persona for income can split you from your real self.
- **Provocation** (choosing a setting because of the reaction it will cause) is another social form of the dare, in any direction.

The drive behind the dare, curiosity and the pull toward the untested, is not the problem. Recovery points it somewhere that gives back: accountability, earned status, mastery. This is what the Kernel calls **Manning**.

KEY POINTS

- A substance is often a symptom report: it points to what it was quieting.
- Trauma comes in many forms, including those that are minimised. It is never your fault.
- Stabilise first, then process, ideally with a trauma-trained therapist. Books count when therapy is out of reach.
- Substances weaken the brakes. That explains substance-fuelled harm without excusing it. Sobriety alone doesn't end an abusive pattern.
- Safety first for anyone in danger: 911 or the hotline.
- Forgive the person; stay vigilant about the pattern.

Staying Non-Addicted: Prevention and Avoiding Transfer

> **In this chapter:** For people who are not addicted and want to stay that way, and for people in recovery who want to avoid swapping one compulsion for another. It focuses on knowing your risks, building natural reward before a gap opens, and checking in regularly. It is not a guarantee.

The idea

You don't need a problem to use the Kernel's framework. The same ideas that help recovery can help prevention: know your vulnerabilities, treat what needs treatment, build real sources of reward, and avoid what is risky for your biology.

A caution. The Kernel version of this guide says to stay "entirely out of the healthcare system" and to implement *only* what a profiling tool outputs. That is not good advice. Preventive care, regular check-ups and proper diagnoses protect you. Genetics tells you little for sure. Use these ideas alongside medical care, not instead of it.

Step 1: Know your risk

Risk factors with strong evidence [Established]:

- Family history of addiction.
- Adverse childhood experiences and untreated trauma.
- Untreated ADHD, anxiety, depression or pain.
- Early age at first use.
- Easy supply, peer norms and stress.
- Low response to alcohol (feeling little effect after several drinks).

Genetic ideas the Kernel adds [Kernel hypothesis / Emerging]: COMT type (fast clearance leading toward stimulation and slow clearance leading toward calm), DRD2 reward deficiency, GABRA2 and alcohol, OPRM1 and opioids, SLC6A4 and MDMA. Treat them as prompts to pay attention, never as fate.

Clinical pharmacogenomic testing has the firmest use: if a clinician orders it, drug-metabolism results (CYP2D6 and others) can guide prescriptions.

Step 2: Drugs and medicines that need care for *your* body

Situation	Why it matters	Evidence
CYP2D6 poor or ultrarapid metaboliser	Codeine and tramadol can fail or become dangerous	[Established]
CYP3A4 inhibitors (some Situation	Can make opioids, sedatives Why it matters	[Established] Evidence
antifungals, antibiotics, grapefruit, some HIV drugs)	and many other drugs far stronger	
ALDH2 variant	Alcohol causes acetaldehyde build-up; flushing is the warning	[Established]
G6PD deficiency	Poppers and some medicines can cause dangerous methemoglobin	[Established]
Heavy caffeine in slow caffeine metabolisers	Longer half-life; sleep and heart strain	[Emerging]
Nitrous oxide	Can inactivate vitamin B12; tell any dentist; avoid recreational use. Risk is higher in people with low B12	[Established]; the MTHFR link is [Emerging]
Family history of psychosis	Cannabis, synthetic cannabinoids and psychedelics raise risk	[Established]; specific gene claims are [Emerging] and mixed
Alcohol with APOE e4	Possible extra brain risk	[Emerging]

Check any new prescription or recreational substance with a pharmacist, not just a tool.

Step 3: Supplements (modest role)

- Basic foundation (omega-3s, magnesium, vitamin D, B vitamins) is reasonable if your diet is thin. Test, don't guess. Dose with your clinician or pharmacist.
- **Folic acid and MTHFR.** The Kernel says carriers should never take folic acid and should take methylfolate instead. Evidence that folic acid harms variant carriers, or that methylfolate works better, is limited [Kernel hypothesis]. Ask your clinician. Do not stop prenatal or prescribed folic acid on your own.

- **ADHD and methylfolate.** The idea that many ADHD diagnoses are really folate-related dopamine problems is a [Kernel hypothesis]. Don't skip evaluation or treatment on that basis.
- **5-HTP** only on physician advice, never with any serotonergic drug.
- Don't layer stimulating supplements without medical advice. High-dose single vitamins can cause harm.
- Peptide "optimisation" products are research compounds, not approved medicines. If you use them, it is physician-only and at your own risk.

Step 4: Natural architecture: build the reward before the gap opens

Your brain needs stimulation, calm, connection and meaning from somewhere. Build them early.

Match activity to need [Kernel hypothesis]:

If you tend to…	Build	Be careful with
Crave stimulation and challenge ("Warrior")	High-intensity exercise, competition, mastery, stakes	Calm-only routines as your main outlet
Get overloaded easily ("Sage")	Calm, structure, nature, steady exercise, limited caffeine	High-adrenaline competition as your only outlet
Need a lot of reward ("reward deficiency")	Several different rewarding pursuits, rotated	A single all-consuming pursuit; escalating thrill-seeking
Basics for everyone		

- **Move:** regular vigorous exercise plus strength training, and daily walking. Check with a doctor if you have heart issues.
- **Sleep:** protect it. Poor sleep drives substance use.
- **Flow:** find at least two activities that stretch your skill a little beyond comfort. Flow is the most reliable natural counterpart to what substances approximate.
- **Connection:** keep at least three real, reciprocal relationships. Safe touch, shared laughter and honest talk are physiologically rewarding [Emerging].
- **Awe and nature:** daily time outside; occasional larger outings.
- **Sound:** music can help regulate mood (energising in the morning, calming in the evening). Instrumental music helps focus.

The dopamine menu

Type	Examples	Role
Appetizers (5-30 minutes)	A walk, cold shower, a call to a friend, music, sunlight	A quick state change when restless
Entrées (1-3 hours)	Sport, making something, deep work, helping others	The weekly foundation (aim for several a week)
Desserts (occasional treats)	Food, shopping, streaming, alcohol	Plan it, savour it, limit it, space it, no guilt

Use the dessert rules for anything with habit-forming potential, including social media, screens and sex.

Avoiding transfer (swapping addictions)

When one compulsion is removed, the same drive often finds another outlet: food, shopping, gambling, work, exercise, sex, scrolling, caffeine, nicotine.

Ask yourself:

- Is the new thing growing while the old one shrinks?
- Do I use it when I feel bad, rather than for fun?
- Am I hiding it or minimising it?
- Is it costing sleep, money, relationships or health?
- Would stopping it cause anxiety out of proportion?

If yes:

- Name the need underneath (see “Why the System Failed You”).
- Put in place the dessert rules and a time or money limit.
- Tell your sponsor, therapist or a trusted person.
- Beware of “healthy” transfers that stop being healthy: extreme exercise, risk-taking as a thrill, “risk capital” speculation if you have a gambling problem.
- Don’t swap into a substance with its own risks (replacing alcohol with cannabis, gabapentinoids or heavy kratom is common).

Step 5: Quarterly check-in

Every three months, write honest answers to these:

Area	Questions
Natural reward	Am I still in flow? Do I have several real rewards each week? When did I last laugh with someone?
Substances	Have I used anything on my avoid list? Is any substance pulling harder? Is my caffeine, alcohol or cannabis use creeping?
Sleep	Do I fall asleep in about 20 minutes and wake rested?
Mood	Has my anxiety or energy changed? What shifted?
Body	Am I moving four or more times a week?
Connection	Do I have three real people? Have I been isolating? Is a screen standing in for a person?

Medical checks worth asking about: blood pressure, blood sugar, thyroid, vitamin D and B12, inflammation markers, and hormones if symptoms suggest it. Don’t self-treat hormones.

Update your plan after illness or injury, after a major life change, or if results drift for two checks in a row.

KEY POINTS

- Prevention is knowing your risks, filling real needs early, and checking in regularly. Not avoiding medical care.
- Evidence-backed risks are family history, trauma, untreated mental health conditions and early use. The gene stories are hypotheses.
- CYP-related drug cautions and nitrous-oxide, poppers and ALDH2 warnings are well established.
- Build several rewards, including flow, movement and people, so no single thing carries your whole reward system.
- Watch for transfer: if a new habit is growing as the old one shrinks, deal with it early.

The Three Unspoken Rules

> **In this chapter:** Three topics that are rarely said aloud. (1) Why the sober body can feel "wrong" and takes time to recalibrate. (2) Why no one should use around children. (3) Why one standard in a household works better than two.

Rule 1: The body in motion, and why sober can feel "off"

The Kernel's term for this is **tachyons**. In plain language: the body's sense of movement and balance can become calibrated to a substance state.

Your movement system depends on the cerebellum (prediction of how movement should feel), the inner ear and balance system, the basal ganglia (automatic skills), and the frontal motor areas. Practising a skill in a particular chemical state, such as dancing on MDMA, running on cannabis or training on stimulants, can tune these systems to that state. The idea that this is a distinct kind of craving is a **[Kernel hypothesis]**. The underlying facts about drug effects on the cerebellum, balance and learning are well documented.

What it feels like: "I feel more like myself when I'm using." Not higher, just more coordinated, more natural. The sober body feels slightly foreign.

What it means: This is a pull toward normalcy, not pleasure, and it may not respond to reward- based craving strategies. It needs practice sober.

What to do:

- Do the activities you used to do on a substance, sober, repeatedly. The dancer who always danced on MDMA needs to dance sober.
- Expect awkwardness for several weeks (the Kernel projects about 2-6). Judge at week 8, not week 1.
- Add balance and coordination work (single-leg stands, uneven-terrain walking, dance, martial arts, tai chi).
- Cardio supports the brain's ability to adapt.
- If you always exercised to music, try some sessions without it. This rebuilds your own movement feedback.

Limits. Long-term heavy alcohol can cause permanent cerebellar damage (unsteady gait). Cannabis and alcohol change balance processing. Persistent unsteadiness, falls or numbness need medical review.

Rule 2: No drugs around children

This is the one absolute in the Kernel's harm reduction material. No substance use when children are present, in your care, or within your supervision. No exceptions for dose, drug or how "fine" you feel. The reason: the judgment you would use to assess your own impairment is the thing the substance impairs.

Why

Reason	What it means
Emergency response	Choking, falls, fevers and a baby who stops breathing need an immediate, competent adult. Reaction time, judgment and physical response are all reduced
Accidental exposure	Edibles that look like candy, pills that look like sweets, liquids on surfaces. Exposure incidents are a common reason for paediatric emergency visits where cannabis is legal
Secondhand smoke	No safe level for children, including cannabis smoke. Smoking "only outside" lowers but does not remove exposure
Modelling	Children learn what adults do. Normalised use at home is linked to earlier use in children **[Established]**
Trust and attachment How to make the rule workable	An unpredictably impaired caregiver causes fear and hypervigilance, a recognised adverse childhood experience

- **Use windows:** use only when the child is not present and won't be before you've cleared. A child who might wake at 3 a.m. means a caregiver should not be impaired at 3 a.m.
- **A designated sober caregiver** whenever any adult uses. Agree this explicitly and rotate.
- **Locked storage** the child can't reach, away from food. The test: if you came home and found the child alone for 15 minutes, could they get to your substances?
- **Edibles** locked separately, never in the fridge or pantry.
- **Naloxone** in the home if opioids or counterfeit pills are around, where adults know where it is. Keep Poison Control (1-800-222-1222) handy.
- **Age-appropriate honesty:** "This is something adults sometimes use, and it isn't safe for children."

Common rationalisations

- **"I'm a better parent when I'm high."** Patience may feel higher. Reaction time, attunement and emergency capacity are lower.

- **"It's medical."** Therapeutic use still impairs. The same windows and sober caregiver apply.
- **"I only use after the baby's asleep."** The one night in twenty when something goes wrong is the night you need to be capable.

If you are a parent struggling, asking for help is protective. SAMHSA: 1-800-662-4357.

Rule 3: One standard, not two

"You can't use but I can" costs something. Holding two incompatible rules requires tracking, justifying and suppressing awareness of the contradiction. It breeds resentment in the other person and anxiety in you.

Double standard	The cost
Partner asymmetry ("you can't, I can")	The prohibition feels like contempt; the prohibiting partner carries growing anxiety
Prescription plus unlicensed extra supply	Hiding information from the prescriber; legal risk; unsupervised dose escalation
"My use is responsible, yours is a problem"	Constant rationalisation; avoiding honest examination
Two honest ways out	

1.**Apply the rule to everyone, yourself included.** 2.**Drop the rule for the other person** if you won't follow it yourself. Agreements about where, when and around whom can still exist, if they are mutual.

What rules in a relationship are for

Purpose	Reasonable?
Safety (children, driving, income)	Yes. Apply to both equally. A safety rule applied to only one person isn't about safety
Health (concern)	Yes. Say it as concern ("I'm worried about your use"), not just prohibition
Control	No. If a rule isn't about safety or health, it's about power, though it will sound like the first two

A test: if your partner switched to the substance you use, would the rule still apply?

The prescription-plus-extra scenario

A person with an ADHD stimulant prescription who buys extra from a dealer because the dose isn't enough.

Why it's risky. Possessing a controlled substance above or outside your prescription is a crime. A positive test or pharmacy-monitoring flag can end the prescription. Tolerance builds outside medical supervision, and cutting off the supplemental supply may cause withdrawal the prescriber doesn't know about. Street supply may not be what it claims (see "Building Your Safety Net").

A better path:

1.**Have the therapeutic-adequacy conversation:** "My current dose gives me X hours of function and I need Y." Document it. If the prescriber won't adjust, ask for a referral to a psychiatrist with ADHD experience.
2.**Be honest with yourself** that continuing the extra supply carries legal and relationship risk while you pursue the legitimate route. 3.**When the prescribed dose is adequate, stop the extra supply immediately.**

KEY POINTS

- If the sober body feels wrong, the answer is repeated sober practice, not a return to the substance.
- No substance use around children. Store everything locked. Use windows and a sober caregiver.
- One set of rules for the household. A rule that can't be applied to yourself isn't a safety rule.
- If a prescription isn't enough, fix it with the prescriber, not the dealer.

Roots and Reversal: How Addiction Takes Hold and How Repair Works

In this chapter: A timeline of how dependence deepens over time, why early action matters, and what active repair involves beyond not using. It also covers why standard timelines may be too fast for people with severe, long-term addiction. The phases and time ranges are **Kernel projections**, not trial results.

Safety first. Withdrawal from alcohol, benzodiazepines, Z-drugs, GHB and high-dose gabapentinoids is medically dangerous and must be supervised. Opioid withdrawal also deserves medical care. Check with a clinician before starting intense exercise, cold exposure, fasting or any supplement, especially if you have heart, kidney, eating or psychiatric conditions or take medication.

Not using is the ground floor

Stopping removes the cause of ongoing damage. It does not repair what has already changed. Passive abstinence is the prerequisite. Active repair is a separate task.

The five root phases (when each layer takes hold)

The Kernel describes addiction as a series of changes at different depths, each arriving on its own timeline. A molecule called **deltaFosB** is often cited: it builds up with repeated use and changes gene activity in reward circuits **[Emerging]**. The phase structure itself is a **Kernel hypothesis**.

Reversal at this What you may depth (Kernel

Phase	Roughly when	What happens	feel	projection)
0. Pre-root	First use to about 7 uses	Reward memory forms; little structural change	Intense novelty; “I can stop anytime”	Highest-leverage window for prevention

Phase	Roughly when	What happens	feel	projection)
1. Shallow	Weeks 1-8 of regular use	Early changes in reward signalling	Pleasure from ordinary things begins to dip	About 4-8 weeks
2. Taking root	Months 2-6	Dopamine receptors begin to fall; cue links strengthen	Cravings triggered by places and people; "harder than I thought"	About 3-9 months
3. Full root Phase	Months 6-24 of heavy use Roughly when	Reduced prefrontal control and What happens entrenched cue responses	Cravings feel automatic; the sober world What you may feel feels flat	About 9-24 months Reversal at this depth (Kernel projection)
4. Deep root	Years 2+	Deeply consolidated changes; some structural damage may be permanent	"I don't remember what normal feels like"	2-5+ years; some changes may stay

Even at phase 4, meaningful recovery is documented. The goal isn't the person you were before. It is a person with self-knowledge and tested resilience.

What gets repaired, and what helps

Layer	What helps	Evidence
Reward signalling and dopamine receptors	Time without the substance, regular vigorous exercise, sleep, structure	**[Established]** that receptors partly recover; exercise effect **[Emerging]** in addiction populations
Glutamate balance	N-acetylcysteine (NAC) is being studied for craving; results mixed. Discuss with a clinician and don't dose yourself	**[Emerging]**
Prefrontal control	Aerobic exercise, meditation, sleep	**[Emerging]** to **[Established]** for exercise and cognition
Cue-triggered craving	Repeated sober exposure to cues; therapy	**[Established]** (extinction learning)
Epigenetic and deeper changes	Time, exercise, nutrition	**[Kernel hypothesis]**; unclear

Layer	What helps	Evidence
Structural damage	Partial compensation by neighbouring circuits	Some losses (e.g. cerebellar cell loss in heavy alcohol use) are permanent

Movement is the main active tool

Type	Why	Note
Interval training (short hard efforts and recovery) Type	Strongest exercise signal for brain-growth factors Why	Get medical clearance first, especially after stimulant, cocaine or alcohol use Note
Steady aerobic (daily)	The daily floor of repair and mood support	Start where you are
Resistance training (3-4 times a week)	Complements aerobic work	
Fasted morning exercise	Claimed to amplify effects	**[Kernel hypothesis]**; not for people with eating disorders, diabetes, or on certain medications
Sleep is overnight repair		

Slow-wave sleep and REM sleep do real work: clearing waste, processing emotional memory and fading cue-linked cravings **[Emerging]**. To protect them:

- Keep consistent bed and wake times.
- Keep the room cool and dark.
- Avoid alcohol and cannabis (both disrupt sleep stages).
- Exercise earlier in the day.
- Side-sleeping may support waste clearance **[Emerging]**.
- Melatonin timing and dose are for a clinician or pharmacist.

Supplements (supporting players)

Common Kernel stack items: NAC, tyrosine, uridine/choline/DHA (“brain stack”), omega-3s, magnesium, CoQ10, curcumin, methylfolate and B12. Evidence in recovery is mostly **[Emerging]** or **[Kernel hypothesis]**. Dose with your clinician or pharmacist. Check interactions. **Do not add dopamine-raising supplements (tyrosine and similar) while psychotic symptoms are active; wait for psychiatric clearance.** Anything for psychosis goes to psychiatric care.

The acceleration toolkit

Each is optional. None is required, and several carry risk.

Tool	What it claims	Caution
Cold exposure	Boosts norepinephrine and dopamine for hours	Raises heart rate and blood pressure. Not for anyone with cardiovascular concerns or in early withdrawal without clearance. Build up gradually
Intermittent fasting Tool	Cellular clean-up and ketones What it claims	**[Emerging]**. Skip with eating disorders, diabetes, pregnancy, underweight or Caution some medications
Meditation	Thickens prefrontal areas; builds control	**[Emerging]**. Start small (see below)
Neurofeedback	Learn to produce a calm, alert brain state	**[Emerging]**; limited evidence. Clinical settings only
Therapeutic psychedelics and ketamine	A short window of heightened plasticity for therapy	Only in legal clinical or trial settings with trained professionals. Research is early **[Emerging]**. Esketamine is approved for depression only. MDMA-assisted therapy is not FDA-approved. Not a self-directed tool
Breath work	Calms the nervous system	Long-exhale breathing is gentle and safe. Intense breath-hold or hyperventilation methods are not for people with heart conditions and never in water
Inversions (legs up the wall)	Possibly improves circulation	Gentle forms only; avoid with glaucoma, hypertension or heart disease. Low priority

Realistic timelines: starting from a deeper deficit

Most “standard” recovery advice was tested on people with mild problems, people with stress but no addiction, or people already stable in a program. After years of heavy use, the same tools usually work, but later. This is the Kernel’s “addict virgin problem”: evidence built for someone else.

What it looks like: the person with long, heavy use who goes to yoga at 30 days sober feels nothing and concludes "nothing works for me." In fact they are starting from reduced reward response, so the early weeks feel empty, a problem with the starting point and not the person.

Common claim	Typical for severe, long-term use (Kernel projection)
"Exercise improves mood in 2 weeks"	4-8 weeks before mood benefits are felt consistently; later for stimulant-related damage
"8 weeks of meditation reduces stress" Common claim	12-16 weeks if starting at a few minutes and building slowly Typical for severe, long-term use (Kernel projection)
"Exercise reduces craving"	True but weaker and later; may need other supports alongside
Adjusting the standard advice	

Intervention	Standard form	Adjusted starting point
Movement	30 minutes moderate, most days	**10-minute fast walk daily**, build to 20 at weeks 4-8 and 30 by weeks 8-12. Higher-intensity movement may register more than gentle stretching; keep it safe
Meditation	20 minutes of breath focus	**2-5 minutes**, add about a minute a week. The first aim is tolerating being present. Walking meditation works for those who can't sit
Groups	Attend a meeting	One-to-one support first; choose groups with mixed recovery stages
Nutrition	"Eat balanced meals"	Eat by the clock because hunger signals are disrupted; protein with each meal; ask about gaps in B vitamins, zinc, magnesium and omega-3
Expectation	"You'll feel it soon"	**Expect little in the first 4 weeks.** That is the deficit, not a failure of the practice

The honest expectation card

- **Weeks 1-4:** exercise feels like work with no reward. Pills feel like pills. This is expected.
- **Weeks 4-8:** a slightly less empty feeling. Sleep feels more like rest.

- **Weeks 8-12:** the daily walk begins to feel faintly like something you chose.
- **Months 3-6:** it stops being only effort. Yoga or meditation produces something real, though not what it produces for the person beside you.

Keep going when you feel nothing. That is when it's most worth continuing.

Cognitive supplements (nootropics)

The Kernel proposes racetams (piracetam and relatives), noopept, and peptides such as Semax and Selank for working memory and focus in severe cases. **[Kernel hypothesis]**. These aren't FDA-approved for addiction recovery, evidence in humans is limited, some are unregulated research compounds, and some can provoke craving in people recovering from stimulants. None is needed to start recovery, and none should be added without a physician who knows your history. If used at all: one change at a time, only after a stable foundation of sleep, nutrition and movement, and with a clinician who sets doses.

Milestones (Kernel projections)

Time	Focus	Typical goal
0-3 months	Safety, sleep, food, daily walk, support	Stabilise; expect flat mood
3-12 months	Build exercise, add meditation and therapy, reduce cue triggers	Craving shorter; sleep improving; more energy
Years 1-2	Strength, cognitive recovery, relationships, work	Sense that sober life is home, not deprivation
Years 3, 5, 10	Maintenance, mentoring, vigilance about transfer	Stable baseline; continued check-ins

These times assume active effort and are not guarantees.

> **FOR CLINICIANS**
>
> - Phase and deltaFosB timelines are Kernel projections; animal and human evidence is partial.
> - The adjusted exercise and meditation timelines are pragmatic starting points, not trial- derived.
> - Screen for cardiovascular, nutritional and psychiatric risk before recommending intense exercise, cold exposure or fasting.
> - NAC and nootropic claims are limited. Weigh interactions.

For families and supporters

- Early recovery looks flat. Don’t read flatness as lack of effort.
- Support the basics: sleep, food, a daily walk, appointments.
- Celebrate small returns of interest or humour.
- If you notice withdrawal signs, psychosis, or self-harm, call 988 or 911.

KEY POINTS

- Stopping use is the start. Repair is active and takes longer than most standard advice suggests.
- Earlier action means shallower roots and faster reversal.
- Daily movement, sleep, a steady routine and support are the core. Everything else is optional.
- Start small after heavy use: 10-minute walks, 2-5 minute meditation.
- Therapeutic psychedelics, ketamine and similar tools are legal clinical-setting options only, not self-treatment.
- Withdrawal from alcohol, benzodiazepines and similar drugs must be medically supervised.

PART 5. IDENTITY, GENETICS AND THE

LONG GAME

Identity, Genetics and Rebuilding

US-centred. Resources and examples assume the United States. If you are in crisis: call or text **988**; emergencies **911**; Poison Control **1-800-222-1222**; SAMHSA **1-800-662-4357**; Crisis Text Line: text HOME to **741741**.

This part of the handbook covers the tools for rebuilding a life after the acute stage: what genetic testing can and cannot tell you, how to track progress honestly, how to take stock of the damage, how to repair relationships, how to build a new identity, and how to give back. Evidence labels used throughout: **[Established]** widely accepted clinical fact; **[Emerging]** plausible, limited or mixed evidence; **[Kernel hypothesis]** the Kernel's own framework, not trial- tested. Untagged text is practical advice.

Chapters in this part:

1. Genetics and testing: what it can and cannot tell you
2. The Milestone Document: tracking six tracks
3. Full Inventory
4. Amends to Self and to Others
5. The Transplant and the Chrysalis
6. Manning: standing the post

Genetics and testing: what it can and cannot tell you

> **In this chapter.** Genes and the brain's "habit protein" ΔFosB help explain why recovery is slow and why a break is not a reset. They do not tell you your addiction type, your destiny, or a date by which you will feel better. Never delay treatment or safety steps while waiting for a test result.

The short, honest version

- **Genes load the dice; they do not roll them.** [Established] Variation in how you metabolize drugs is real and clinically useful. Claims that a genotype *causes* a personality, a "type" of addict, or a specific outcome are [Kernel hypothesis] at best.
- **Where the Kernel's genetic material is strongest:** how the liver clears drugs and medications (pharmacogenomics), and a few specific safety variants (see below).
- **Where it is weakest:** MTHFR, COMT, SLC6A4, DRD2 and similar "constitution" genes. Associations in studies are small and mixed. [Emerging] or less.
- **No consumer test can predict your personal recovery timeline, relapse risk or craving pattern.** None exists.
- **Clinical history beats genotype.** A seizure during withdrawal, a bad reaction to a drug, a family history of psychosis: these tell you more than a SNP report. They are clinical findings, not proof of a genotype.

Ancestry is a poor stand-in for your own genes

Some Kernel material maps whole regions or "city editions" to genetic risks (for example, "Northern Europeans are poor metabolizers of MDMA"). Treat that as a rough population statistic, not advice for any individual.

- Carrier frequencies differ between populations, and some are well documented. But individuals vary widely, most people are of mixed ancestry, and many published figures are approximate.
- **Do not decide your risk from your ancestry.** If a variant matters for your safety, test for it or ask a pharmacist or prescriber. Do not assume you have it or lack it.
- Assuming you are "protected" because of your background is the more dangerous mistake.

What is reasonably solid: variants with practical safety meaning

Variant or gene	What it does	Evidence	What to do
ALDH2 *2 (common in people of East Asian ancestry)	Poor clearance of acetaldehyde, a toxic alcohol by-product. Flushing, fast heartbeat, nausea; acetaldehyde is a recognized carcinogen.	[Established]	If alcohol makes you flush and feel ill, take that seriously. It is a reason to avoid alcohol, not a tolerance to push through.
CYP2D6 (slow to Variant or gene	Liver enzyme that What it does	[Established] for Evidence	Tell prescribers you What to do
ultra-rapid)	handles many drugs, including codeine, tramadol and MDMA, and many antidepressants and antipsychotics.	codeine/tramadol and many prescription drugs; [Emerging] for recreational-drug effects	have a result. Ultra-rapid status can turn codeine or tramadol into a dangerous opioid dose. Never use a result to guess “safe” amounts of illicit drugs.
CYP2C19 (poor metabolizer)	Handles diazepam and some other sedatives and antidepressants.	[Established] for prescribed drugs	Prescribers can adjust choices. Dose with your clinician or pharmacist.
CYP2B6 (reduced function)	Involved in clearing ketamine, bupropion, ketamine effects; methadone and some stimulants.	[Emerging] for [Established] as a drug-metabolizing enzyme	Mention to your prescriber, especially for methadone or bupropion.
G6PD deficiency	Red blood cells are fragile when exposed to certain oxidizing drugs.	[Established]	Inhaled nitrites (“poppers”) and some medicines (including some antimalarials) can cause dangerous methemoglobinemia or red cell breakdown. If you might be G6PD deficient (family history, or ancestry from malaria-endemic regions), get a simple blood test and avoid nitrites regardless.
OPRM1 A118G	Opioid receptor variant.	[Emerging]. Studies on naltrexone response are mixed.	Do not use it to choose or refuse treatment.

Variant or gene	What it does	Evidence	What to do
GABRA2, DRD2, DRD1, CHRNB2, DBH Variant or gene	Small associations with dependence severity or relapse in some studies. What it does	[Emerging] Evidence	Interesting for research. Not actionable for you today. What to do
MTHFR C677T / A1298C, COMT, SLC6A4, MAOA	Folate, dopamine or serotonin handling.	[Kernel hypothesis] / [Emerging]. Large reviews find weak or inconsistent links to addiction or treatment outcomes.	Do not buy supplements because of a MTHFR result. If you have a related blood abnormality (for example high homocysteine or low folate), your clinician decides what to do.

Some Kernel pages describe MTHFR homozygosity as a "methylation fault line" that makes comedowns worse and recovery longer. That is a [Kernel hypothesis]. The variant is common, usually causes no symptoms, and is not an established driver of addiction.

Safety notes:

- Genetic results do not replace the basics: no unverified supply, naloxone on hand if there is any chance of opioids (including counterfeit pills), no mixing, no abrupt stops of alcohol, benzodiazepines, Z-drugs, GHB or high-dose gabapentinoids. See *The 12 Safety Rules*.
- Do not use a result to work out how much of an illicit drug is "safe for your genome." The street supply is not standardized, and no result fixes that.
- Pharmacogenomic tests are most useful when a prescriber is choosing or adjusting a medicine. Ask a pharmacist how to get a clinical-grade test and how to bring the result to appointments.

ΔFosB: why the habit lingers and why a break is not a reset

ΔFosB is a protein that builds up in reward circuits (especially the nucleus accumbens) with repeated drug or intensely rewarding exposure. It switches other genes on and off. Most of what is known comes from rodent studies and a few post-mortem human studies. **It has never been measured in a living human brain.** Human timelines below are extrapolations.

How it builds up

1. After a single exposure, an unstable form appears and is cleared within hours to about a day. [Established, animal]
2. With repeated exposure, a chemically modified form becomes very stable and resists the cell's normal clean-up. It accumulates over days to weeks of repeated use. [Established, animal]

3. After the last use, new production stops within a day or two. The stable protein then declines slowly, over weeks to a couple of months in rodents. [Emerging for human timing]
4. While it is active, ΔFosB leaves lasting changes at the level of gene regulation and in the density of connections on reward-circuit neurons. These outlast the protein itself, possibly by months. [Established in animals; Emerging in humans]

What drives it

Rough ranking from animal and mechanistic work. Treat as a map, not a measurement.

Higher	Moderate	Lower or uncertain
Crack and powder cocaine, methamphetamine, nicotine (frequent redosing), short-acting cathinones, fast-onset smoked or injected routes	Alcohol (binge pattern), heroin and other opioids, MDMA, gambling and gaming **[Emerging]**) loops, binge eating of high-sugar/high-fat food	Benzodiazepines, cannabis, ketamine, GHB, kratom (all
Notes:		

- Fast onset, sharp peaks and frequent redosing push induction up. Steady, long-acting treatment (for example methadone or buprenorphine) avoids the peak-and-trough pattern. That is part of the rationale for opioid agonist therapy. **[Emerging]** mechanism; the clinical benefit of OAT is **[Established]**.
- Some medicines share mechanisms with drugs of misuse (stimulant medications, antipsychotics, antidepressants). **Never stop a prescribed medicine because of ΔFosB.** Discuss any change with the prescriber. Stopping some of them abruptly carries real medical risk.
- Sex, stress and sugar can also induce ΔFosB in animals. [Established, animal]. In chemsex, long sessions, repeated redosing and sleep loss stack several of these at once.

What this means in practice

- **A break is not a reset.** After a break, the circuit is quiet but primed. Resuming use tends to rebuild the habit faster than the first time. [Emerging; fits the well-documented animal reinstatement effect]
- **Tolerance falls during a break, which makes a return to the old dose dangerous.** This is the same point as the safety rule: after any break, a previous amount can be an overdose.
- **Polydrug use usually means a slower, rougher return.** Poor treatment retention, higher relapse and more complicated withdrawal in polysubstance use are well documented. **[Established]** Whether ΔFosB is part of the reason is **[Kernel hypothesis]**. Read single- substance timelines as a minimum.
- **Cravings can come back at weeks or months for purely biological reasons.** That is not failure; it is expected.
- **What helps, supported by the same literature:**

- oSustained abstinence (the largest lever).
- oRegular exercise (induces ΔFosB by a different route linked to resilience in animals). [Established, animal]
- oSleep. **[Emerging]**
- oLower chronic stress. **[Emerging]**
- oTime.

Supplements and ΔFosB

Nothing reverses accumulated ΔFosB faster than time. Some nutrients support dopamine, GABA and methylation enzymes in general. They have not been shown to affect ΔFosB. For example, vitamin B6 and B2 cofactors are indirectly involved in neurotransmitter synthesis [Emerging, indirect], while a proposed link between calcium glycinate and ΔFosB has no credible mechanism. Do not take supplements to "speed clearance." If you want to use any supplement, check interactions and dosing with a clinician or pharmacist. Some (including 5- HTP and other serotonin precursors) are dangerous with common medicines and should be used only on physician advice.

DNA and epigenetic tests: what you can actually buy

Test	What it reads	What it can tell you	What it cannot tell you
Clinical pharmacogenomic panel	Drug-metabolizing genes (CYP2D6, CYP2C19 and others)	Prescribing guidance for certain medicines **[Established]**	Whether you will relapse or how addictive anything is for you
Consumer SNP array (23andMe-style raw data)	A fixed list of common variants	Some of the same pharmacogenomic info, with weaker quality control	Rare variants in genes such as FOSB; ΔFosB behavior; recovery timeline
Whole-genome bisulfite sequencing and epigenetic clocks	DNA methylation across the genome, from blood or saliva	Raw data and research-grade biological-age estimates **[Emerging]**	ΔFosB state in the brain (not accessible); a "weeks until you clear" number
Liver function and routine blood tests (AST, ALT, GGT, bilirubin, albumin, CBC, metabolic panel)	Current organ function	Whether your liver can clear drugs normally; whether recovery or dosing needs adjusting **[Established]**	Genotype

- **Liver health matters as much as genes.** A "fast metabolizer" genotype inside a damaged liver does not behave like a fast metabolizer. For anyone with known liver disease or cirrhosis, medicine choices

and withdrawal planning need individual clinical guidance. This also means two people on the same plan can honestly be on different timelines.

- **A personalized ΔFosB clearance estimate does not exist.** A research pipeline combining sequencing, methylation and repeated biomarkers might one day approximate one. It has not been built or validated. Anything marketed today as a personal clearance date is not evidence-based.

FOR CLINICIANS

- Pharmacogenomic testing is reasonable when choosing or adjusting medicines. Result interpretation should follow CPIC-type guidance, not recreational-drug heuristics.
- Resist genotype-to-phenotype claims for addiction. Large candidate-gene studies for MTHFR, COMT, SLC6A4 are inconsistent. A seizure history is a clinical finding, not a genotype.
- Ancestry is not a substitute for testing. Counsel patients against both false reassurance and false fatalism.
- ΔFosB and chromatin explanations are useful psychoeducation about "primed circuits" but are mostly animal data. Say so.

For families and supporters

- A test result is not a verdict on your loved one. Help them bring any result to a pharmacist or prescriber instead of searching forums.
- Do not treat a good test result as permission to relax safety rules, and do not treat a "bad" one as a reason to expect failure.
- Slow progress and cravings months in are expected biology, not a lack of effort.

KEY POINTS

- Genes shape drug metabolism and some risks; they do not decide your outcome.
- Ancestry is a weak proxy. Test or ask rather than assume.
- Practical, established findings: ALDH2, CYP2D6/CYP2C19, G6PD and nitrites, and liver function.
- ΔFosB explains why the habit lingers and why a break is not a reset, but it has not been measured in living humans.
- No consumer test gives a personal recovery timeline. Never delay care for test results.
- Do not use any result to guess "safe" amounts of illicit drugs.

The Milestone Document: tracking six tracks

> **In this chapter.** A single “days clean” number collapses everything into one dial and drops to zero after a lapse. This chapter gives a six-track dashboard instead. It shows what is still standing after a lapse and what needs attention now. It is a tracking tool, not a diagnosis or a treatment plan. If you are in crisis right now, use the emergency steps in the safety chapter or call 911 or 988.

Why not just a day count?

A chip or day count is honest about one thing: unbroken time since last use. It is fine to keep using one. Its weakness is that after a lapse it says “zero” even though a repaired relationship, a regained sleep pattern and learned skills are still there. People who see only zero can conclude they lost everything. That belief itself raises relapse risk.

Use both:

- **Duration** (days since last use): can reset.
- **Origin** (**D-Day**, the date your recovery effort began): never moves. Write it down once. A lapse is a real event that gets its own entry. It does not erase your D-Day, just as a later setback does not change the date a campaign began.

The six tracks

Track	What it covers	A milestone here looks like
Safety and medical	Emergency plan, medicines, interactions	No unaddressed emergency; the right medication plan; safety rules followed (naloxone, no unverified supply, no abrupt stops)
Biology and genome	Lab results (including liver tests), any genetic or pharmacogenomic result, and what they mean for your plan	Tests done and results in hand; a summary you can show a new prescriber; labs repeated on your clinician’s schedule

Track	What it covers	A milestone here looks like
Cues and context	People, places, things and circumstances tied to use	Access blocked or made hard; triggers named; a plan that has been rehearsed, not just written
Natural architecture	Real-world replacements for what the substance provided: schedule; something you can exercise, connection, mastery, calm, meaning	A specific practice on a real describe from this week
Underlying condition	Depression, ADHD, anxiety, trauma, pain, or anything the substance was treating	A diagnosis addressed by a clinician, a plan in place, a way to tell whether it works
Identity and Manning Track	Who you are becoming and what you offer back What it covers	A sense of self not organized around the substance; later, peer support, mentoring or A milestone here looks like service

The four levels

Level	Meaning
Primary focus	Needs deliberate daily attention now. Most of your energy goes here, and that is appropriate.
Active	Still being built; regular, roughly weekly effort.
Maintenance	Holding steady; periodic check-ins (monthly or quarterly).
Standing safeguard	Low-effort and nearly automatic but never dropped: a few fixed rules for life (never stop this medication abruptly, carry naloxone, never mix these two things).

Substantiation: what makes a milestone real

A milestone is **substantiated, not claimed.** It needs a nameable piece of evidence:

- a lab result;
- a relationship repaired and tested by a real disagreement you got through without relapse;
- a skill used under real conditions (not only practiced);
- a care plan actually followed.

Each substance chapter has a milestone table with its own timings. Those timings are Kernel projections unless marked otherwise. Use this chapter as the common scaffold.

Grading a lapse

Not every lapse is the same size. “Everything reset” and “nothing happened” are both inaccurate.

Severity	What it looks like	Effect on the record
Variance	A craving, a close call, no use	None. Note it privately as data.
Immaterial lapse	Brief, limited, caught early	Mostly Cues and context. Record, name the trigger, continue.
Material relapse Severity	A more sustained return to use What it looks like	Cues and context, often Natural architecture, possibly Effect on the record Safety and medical. Do a full tabulation and contact a prescriber or support person.
Significant restatement	Extended or severe relapse	Most tracks move back toward Primary focus, track by track. Biology and genome essentially never restates.
Emergency	Overdose, dangerous withdrawal, or any emergency	Stop all record-keeping. Call 911 or Poison Control.

A lapse is information and a medical risk. Tolerance has fallen, so a previous amount can overdose you. See *The 12 Safety Rules*.

If you describe a relapse as “the plague has returned,” that is a fair description of how it feels. But do not assume the body has collapsed with it. Check nutrition, sleep and basic care directly, one at a time.

The tabulation worksheet

Fill this in at a routine check-in (monthly or quarterly), at each milestone window (end of the first 0-24 months, then years 3, 5 and 10), at your yearly observance, before or after a major transition (hospital discharge, medication change, new prescriber, move), and **immediately after any lapse**.

Level now (primary / active / maintenance / Trackstanding)EvidenceNext review

Safety and medical

Biology and genome

Cues and context

Natural architecture

Underlying condition

Identity and Manning

Header fields: name, date, **D-Day (fill in once, never change)**, guide(s) in use, reason for this record, lapse severity if relevant, witness (optional: sponsor, clinician or trusted person), next review date.

After a lapse, add one line per track: what is still standing, and what has actually moved back toward primary focus.

Yearly observance

Once a year near your D-Day, hold two things at once:

1.**Review the year.** Write a short, specific account of what you built. 2.**Write the obituary.** Write about who you used to be: what you do not miss, and, if true, what you still miss or grieve. Both can be true in one piece of writing.

Keep both and file them with your tabulations. If what comes up feels heavy or stuck, bring it to a therapist.

Liver and body differences

The same dose can act differently in different bodies (genetics) and in different livers (organ health). People with reduced liver function may need longer to reach maintenance on a track. That is not doing recovery wrong. Take liver tests to a clinician rather than interpreting them alone.

Self-taxonomy

“I feel bad” cannot be acted on. “Hungry,” “genuine threat,” “grief for my old life,” “a craving using the same hardware as hunger” can. Naming what is happening in specific words, and holding yourself to what you have named, is a core skill of recovery.

KEY POINTS

- Keep D-Day (origin) separate from days since last use (duration).
- Track six areas on four levels, with evidence for each.
- Grade a lapse before deciding what it changed. Most tracks usually survive.
- After any lapse, assume tolerance has fallen.

- A milestone needs evidence, not a feeling.

Full Inventory

In this chapter. A structured, non-punishing audit of what substance use cost you and a 180- day plan to rebuild. It covers health, thinking, personality and values, money and trust. Do the assessment first, then the plan. The audit is a baseline, not a judgment.

Safety first. If withdrawal may still be an issue, or you are using alcohol, benzodiazepines, Z- drugs, GHB or high-dose gabapentinoids, do not stop suddenly. Get medical supervision. Cognitive tests and self-scores here are screening tools, not diagnoses.

Step 1: Physical audit

Score each area 0 (serious damage) to 10 (no sign of damage), and note the most urgent item to raise with a doctor.

System	What to check
Liver and metabolic	Yellow skin or eyes, upper-right abdominal pain, unusual fatigue; liver panel (AST, ALT, GGT, bilirubin, albumin)
Heart	Chest pain or palpitations during or after use, blood pressure, resting heart rate, any ER visits for heart symptoms
Nervous system	Tremor, balance or coordination problems, blackouts, numbness or tingling, seizures in withdrawal
Teeth and mouth	Last dental visit, erosion, gum disease, dry mouth
Nutrition	Weight change, low B vitamins, vitamin D, iron, folate; energy at rest
Sleep	Hours actually slept, waking, ability to sleep without a substance

Substance-specific checks to ask a clinician about

Substance	Common medical follow-up to consider
Alcohol	Liver tests, B1 (thiamine) and other nutritional status, blood count, blood pressure, pancreas or nerve symptoms
Stimulants (including meth)	Heart evaluation, blood pressure, dental review, nutritional bloodwork
Cocaine, crack	ECG and heart review, nose and sinus exam if snorted, chest imaging if lung symptoms
Opioids	Hepatitis C and HIV testing, hormone panel, gut function, endocarditis evaluation if fever and injecting history, brain injury review after any overdose
MDMA	Memory and attention testing, sodium history, ECG
Benzodiazepines	Anxiety and cognitive review, bone health if long-term use and falls
Cannabis (heavy) Substance	Lung function if smoked, mood and motivation review, review of recurrent Common medical follow-up to consider vomiting episodes
Ketamine	**Urgent** urine and kidney testing if urinary symptoms such as pain, urgency or blood, with a urology referral
GHB / GBL	Seizure history, sleep and anxiety baseline, liver function. Withdrawal is a medical emergency.

Step 2: Cognitive baseline

Substances commonly affect memory, attention and planning. These often improve with abstinence, sleep and time, but this varies. Establish a baseline and repeat it later.

- **Simple home checks** (screening only): digit span (forward and backward), animal and F- word fluency in 60 seconds, serial 7s, a written meal-planning task, and a 10-word recall test after 5 minutes.
- **Standard clinical screen: the MoCA.** [Established] A score of 26-30 is normal; 18-25 suggests mild impairment, which is common in early recovery and often improves; below 18 warrants formal evaluation. Ask a clinician to administer it.
- Repeat at about 30, 90 and 180 days. Test when rested and not intoxicated or in acute withdrawal.
- **If scores are low or falling, request a neuropsychological evaluation.**

Step 3: Personality, values and trust

Substance use often shifts how we act (less follow-through, more irritability) and what we care about. Naming this helps.

- **Personality dimensions.** Rate yourself before heavy use and now on conscientiousness, agreeableness, emotional stability, openness and extraversion. A validated free tool such as the IPIP-NEO can help. Retake at 90 and 180 days. **[Established]** that substance use disorders are associated with shifts in these traits; the "before" rating is memory- based and imprecise.
- **Values.** For family, work, health, creativity, community, honesty, security and meaning, write what each looked like before and now.
- **Trust audit.** Score 0-10 the damage to: your trust in yourself, your closest person, work, and wider circles. Write what specifically was broken. Self-trust is usually the most damaged and the most important.

Step 4: Money triage

Treat this like emergency care: stop the bleeding, stabilize, then rebuild. 1.**Review every automatic payment today.** Pause non-essential subscriptions, memberships and recurring donations. **Keep** rent or mortgage, utilities, insurance (health and car), and any prescribed medicine, so you do not trigger a worse problem such as a missed rent payment or a lapse in treatment. 2.**Pay in this order:** (1) shelter and utilities, (2) transport and its insurance, (3) food, (4) basic phone, (5) tools that directly produce income in the next 30 days, (6) medicines and treatment (methadone, buprenorphine, naltrexone, seizure, heart, diabetes, HIV and mental-health medicines are not negotiable), (7) minimum debt payments that prevent serious legal consequences (child support, tax payment plans, income-driven student loans), (8) everything else, only after about 90 days of stability. 3.**Call early.** Landlords, lenders and utilities will often negotiate before default; much less after. Ask about hardship programs, medical necessity protections and payment plans. 4.**Lower priority, not ignorable.** Credit-card debt (ask about hardship plans), medical debt (ask about hospital financial assistance) and old collection accounts all carry consequences. Check your state's rules or speak to a nonprofit counselor before ignoring any debt. 5.**Write down every debt** with amount, rate and status. Unknown debt cannot be solved.

Where to get help (US): 211 (call or text; local rent, food, utility and shelter help), benefits.gov (SNAP, Medicaid), LIHEAP (energy assistance), findtreatment.gov or SAMHSA 1-800-662-4357 (treatment funding), NFCC.org (free or low-cost credit counseling), annualcreditreport.com (free credit reports), public libraries (internet, job search).

Step 5: The 180-day plan

Phase	Focus	Check at the end
Days 1-30: stabilize	Medical appointment; safety rules in place; sleep routine; one home-cooked meal a day; stop financial bleeding; baseline tests	Doctor visit done or booked; essentials secured; baseline recorded
Days 31-60: cognitive and financial recovery	Daily cognitive practice; second round of tests; all income sources identified; credit report reviewed; cooking at home most nights; one reciprocal social contact a week	Improvement in at least two cognitive areas; essentials covered without borrowing
Days 61-90: natural architecture Phase	Regular vigorous exercise (as your doctor allows); a daily calming practice such as breathing or meditation; an absorbing activity; values statement written; first Focus concrete step toward repairing one trust area	Exercise habit of several weeks; written values; one relationship beginning to repair Check at the end
Days 91-180: consolidate	Keep routines; second debt or a repayment plan underway; at least two reciprocal connections; a new account of what happened	Retested cognition; stable money picture; identity narrative written

Targets are Kernel projections, not clinical benchmarks. Go at your own pace. Medical needs, liver health and underlying conditions change timelines.

Cognitive rehabilitation habits (practical, low-risk)

- **Memory:** learn one new fact daily; write it at night; review weekly.
- **Attention:** a daily breath-focus practice and daily long-form reading without a screen.
- **Planning:** cook from a recipe; plan the week in writing on Sunday.
- **Speed:** short timed puzzles.
- **Emotional regulation:** a twice-daily mood log (rate 1-10, name one trigger and one response). For acute distress, cool water on face or wrists, paced breathing, brief intense movement.

Exercise, sleep and meditation have reasonable evidence for attention and mood. [Established / Emerging, depending on outcome] Claims that these protocols repair specific neurotoxic damage from particular drugs are **[Kernel hypothesis]**.

Step 6: The “enhanced baseline” idea

The Kernel suggests that people who complete this work can end up with more self-knowledge, structure and resilience than before. That is a hope, not a guarantee, and it is not a claim that brain function will exceed its pre-use level. Supplements aimed at “fixing” a genetic variant (for example folate forms for MTHFR) are **[Kernel hypothesis]**; discuss any with a clinician.

The identity bridge questions

Write answers, and return to them at 30, 90 and 180 days.

1. Who was I before the substance became central? What did I care about and what could I do?
2. What did the substance actually provide that was real? (Name the signal honestly: relief, sleep, confidence, belonging.)
3. What do I know now that I did not know before?
4. What natural source can provide that function now?
5. Who do I want to be in 180 days? (Not what I want to have.)
6. What is one thing I will do today that that person would do?

FOR CLINICIANS

- The inventory works as an intake and re-assessment framework. Use validated instruments (MoCA, GAD-7, PHQ-9, AUDIT) and refer for neuropsychological testing when indicated.
- Screen for hepatitis C and HIV in people with injecting history; consider endocarditis, and renal or urological review for ketamine use.
- Financial stress is a relapse risk factor. Social-work referral is often more useful than advice.

For families and supporters

- Offer to help with the paperwork and phone calls (benefits, rent, medical appointments), not with paying off every debt.
- Do not run the audit for them. It works when it is theirs.
- Expect uneven progress. Test scores and mood often improve slowly.

KEY POINTS

- Audit health, thinking, personality, values, money and trust before planning.

- Medicines and treatment are never the thing to cut to save money.
- Triage money in order. Call before you default.
- Retest cognition at about 30, 90 and 180 days.
- Targets and “enhanced baseline” claims are Kernel projections.

Amends to Self and to Others

> **In this chapter.** Amends begin with you, then move outward with care. It is action, not apology. Some direct amends should never be attempted. For many harms the best amends is a changed life, shown over years.

Part 1: Amends to Self

You are also a person who was harmed by the addiction. Your body, mind, time, potential, self- trust and sense of identity all took the hit. Naming that is not self-pity. It helps direct limited energy first to what you can actually change.

What was harmed	One way to make amends to yourself
Body	Medical audit, sleep, regular meals, a doctor appointment
Mind What was harmed	Cognitive practice, learning something new, treating anxiety, ADHD or depression One way to make amends to yourself
Time	Plan the days you have rather than mourning the ones you lost
Potential	Pick one skill, relationship or project to start now
Self-trust	Keep small promises, one at a time. Self-trust is rebuilt the same way it was lost.
Identity	Complete the identity bridge questions; write a new account of your story
A self-amends statement	

Write it in your own words and keep it private. Starting point:

The addiction harmed my body, mind, money, relationships and sense of self. I was not the only person harmed, but I was a person who was harmed. The amends I owe myself are ___. I make them through

specific daily action, not through feeling bad. I forgive myself, not to erase consequences, but to stop adding self-condemnation to an already heavy rebuild. I kept going. That is enough to begin.

Part 2: Amends to Others

What amends is

Amends is repair, not apology. An apology is words about the past. Amends is a change, verified by the person harmed rather than only claimed by you, that repairs something or prevents repetition. A private promise to repay is like an entry on a ledger no one else can see. It never gets closed.

This fits alongside Steps 8 and 9 of 12-step programs. It does not replace them. If you work a program, bring this to your sponsor.

Step 1: Make the list

Write every name before you decide what to do about any of them. Deciding a name does not belong is often guilt-avoidance. Include:

- money taken, borrowed or unpaid;
- broken promises, absence, dishonesty;
- someone blamed for something you did (this often carries extra weight);
- harm to a child (which needs more care, see below);
- indirect harm (debts or damage that outlasted the use);
- yourself.

Becoming **willing** is a separate step from being **ready**. Willingness can take time.

Step 2: Timing

Do not reach for amends early, before you are stable, just to relieve your own guilt. That can hurt the other person. A sponsor or therapist can help judge timing.

Where you are	Amends work
Primary focus / early recovery	Build willingness. Act only if a specific harm is urgent (a debt with legal consequences, a child's immediate safety).
Active	Lower-risk amends: return an item, begin a debt plan, an honest conversation with someone safe.
Maintenance	Harder, higher-stakes amends with real, demonstrated stability to point to.

Where you are	Amends work
Standing safeguard	Living amends continue indefinitely.

Step 3: When NOT to attempt direct amends

The Ninth Step's own caution, "except when to do so would injure them or others," is the most important rule here. Do not make direct contact when:

- there is domestic violence, a restraining order or ongoing safety risk. Contact can be dangerous or illegal. Start with a therapist or lawyer;
- the harm involves a child. A well-meant conversation can confuse or burden them. Work with a family therapist. Sometimes the right amends is years of reliable presence;
- reopening someone's trauma would mainly relieve your guilt;
- you face real legal exposure. A lawyer decides whether and how;
- the person has died, cannot be reached, or has asked for no contact.

Step 4: The conversation, when it is appropriate

- Name the specific harm ("I took money from you without asking"), not a general "I'm sorry for everything."
- State concretely what you are offering: repayment, a changed behavior, an honest account.
- Let their response be theirs. Anger, distance or a flat no are legitimate.
- **Do not ask for forgiveness** as part of the amends. Forgiveness, if it comes, is theirs to give.

When direct amends is not possible

- **Living amends:** sustained, changed behavior over real time, verified by more than one conversation.
- **Through a third party:** a trust fund for a child, a donation to a related organization, a letter held by a therapist.
- **To the pattern itself:** helping someone earlier in recovery (see Manning).

Part 3: Realistic expectations about forgiveness

Many people in recovery find that repair takes longer than they hoped, and that some relationships do not fully return. The Kernel puts this strongly. Read its claims as [Kernel hypothesis], not as statistics:

- Families who were hurt repeatedly can stay watchful for a long time. This is a normal protective response, not proof that they do not love you. [Emerging; consistent with the psychology of broken trust]

- "You're still lying" in response to a normal bad day is common and painful. Distinguish honest worry from permanent labeling. If your only way to keep a relationship is to perform wellness, tell a therapist.
- Some people will say "I forgive you" and still hold back. Some will drift away months or years later.

At the same time, many families do rebuild trust, sometimes slowly. Do not write people off. This chapter is not telling you to stop trying. It is asking you not to make your recovery depend on any one person's response.

The begging trap

Repeatedly pleading for forgiveness ("please just tell me you forgive me, I can't go on without it") puts your recovery in someone else's hands, asks them to perform feelings they may not have, and can deepen your shame each time it does not work. Instead:

- Say what you did, offer the repair, and let it go.
- The release from guilt that you can give yourself is your own to grant.
- Ask yourself what else that time and energy could have bought: sleep, medical care, a financial plan, a skill.

Relationship triage

Your time and emotional energy are limited. Sort relationships honestly and without cruelty.

Relationship	Does it allow you to grow beyond "addict"?	What to do
Sees who you are becoming	Yes	Invest.
Says "I forgive you" but stays wary, with occasional "you're still lying"	Partly	Keep in contact, lower expectations, protect your bandwidth.
Holds the label as permanent and will not update Relationship	No Does it allow you to grow beyond "addict"?	Polite, limited contact; do not seek validation they cannot give. What to do
Uses your history as leverage ("after everything you did")	No, and harmful	Protect yourself. Distance is appropriate. A therapist can help.
Has moved on and no longer wants contact	N/A	Do not pursue. Respect it.

Family. Parents carry years of hypervigilance. Siblings may resent having been "the functional one." Children needed a reliable parent and may be wary or independent. None of this makes anyone a bad person. The goal is a new relationship with the people as they are now, not a return to a pre-addiction

ideal. It takes years. A family therapist who is not invested in performing reconciliation can help, and family members need their own support as well.

Part 4: Service and love, the forward model

- **Service is complete when it is done.** It does not need anyone's acceptance. Peer support, community work, mentoring or teaching all give you what the substance was imitating: effort rewarded, real connection, being useful. [Emerging; consistent with research on meaningful activity and social connection]
- **Service to people you did not harm still counts** as contribution rather than extraction. It does not cancel the harm to specific people and should not replace direct repair where safe.
- **Love without conditions** means taking interest in other people's lives, being honest rather than managing their impression of you, and being useful to them, not performing change to earn pardon.
- **The life is the amends.** A rebuilt body, steady work, honesty and service are the evidence that something real changed. Some people will see it. Some will not. It is worth building either way.

FOR CLINICIANS

- Help clients separate guilt (about behavior) from shame (about identity) and plan amends with safety and legal review. Support family sessions separate from the client where useful.
- Watch for amends-as-relapse-risk: premature contact, flooding of guilt, or confession of legal exposure.
- Moral injury (for example, being blamed for harm the client caused) may need trauma-informed care.

For families and supporters

- You are allowed to be wary, and allowed to set limits. You are also allowed to take your time and get your own support.
- If you can, avoid using the history as a weapon. Say what you need and what you can offer.
- Ask for the amends you actually want (repayment, honesty, changed behavior). You do not have to provide forgiveness on a deadline.

KEY POINTS

- Start with amends to yourself, and make them through action.
- Amends is repair, not apology. Do not ask for forgiveness as part of it.

- Never attempt direct amends where it would harm someone (violence, children, legal risk).
- Do not make your recovery depend on any one person’s response.
- Triage relationships honestly; keep those that help you grow.
- Service, honesty and a changed life are the long amends.

The Transplant and the Chrysalis

> **In this chapter.** Two ideas for rebuilding identity. **The Transplant** says the devotion, knowledge and routine that went into substance use are real strengths that can be redirected. **The Chrysalis** says early recovery can feel like dissolution, and that the person who emerges is not just the old one improved. Both are metaphors and practical frameworks, not clinical treatments.

Part 1: The Transplant

The idea

Substance use came with a structure: obsessive attention, specialized knowledge, a daily ritual, a regular supplier, a community, and an identity ("I'm someone who does this"). The Kernel calls this the "cult-like factor." Rather than treating all of it as pathology, the Transplant asks: **what if the same engine had a different address?**

[Kernel hypothesis] This is a motivational reframe, not a tested treatment. It fits well with established ideas: replacing a substance's function with healthier activities, building purposeful routines and joining groups.

Component	In the substance context	Transplanted
Devotion and attention	Hours thinking about, obtaining and using	Hours learning and tending a practice that grows
Specialized knowledge	Dosing, sources, pharmacology	Cultivars, nutrition, breeds, technique
Daily ritual Component	Morning dose, supply check In the substance context	Morning watering, feeding, training session Transplanted
Supplier relationship	The dealer	Nursery, pet shop, specialist store (open in daylight)
Community	Other users	Clubs, forums, classes
Identity	"I do this"	"I'm the person who grows things / trains this dog"

Matching the engine to the practice

Match the **function**, not the substance. Ask what the substance was doing for you (calm, intensity, connection, focus, a sense of being needed) and pick an activity that does the same.

What the substance gave you	Possible practices
Fast, high-energy reward	Fast-growing crops (microgreens, radishes), running, climbing, short competitive goals
Slow, deep comfort	Bonsai, fruit trees, long-term gardens, knitting or woodworking, long-term crafts
Absorbed solitary focus	Aquarium (a planted tank is a garden and an aquarium in one), model building, music production, foraging walks
Social connection	Group classes, team sports, community gardens, a dog (if you can care for one)
Being needed	Rescue or foster work, volunteering, caring for a plant or animal
Intensity and gear	Strength training, music and DJ equipment, cooking competitions
Cautions:	

- **Do not transplant into a copy of the old behavior.** Avoid home brewing or other alcohol production if alcohol was your problem. Non-alcoholic fermentation (kombucha, kefir, sourdough, kimchi) is a safer version, but if even brewing smells and tools are triggers, skip it.
- **Avoid growing or handling the same substance or its source plant.** Redirect toward food crops, herbs and ornamentals.
- **Foraging wild mushrooms is risky.** Misidentification can kill. Only forage with an expert or a local mycological society, and never eat a wild mushroom you have not had verified. Cultivating culinary mushrooms from a kit is a safe starter.
- **Animals depend on you.** A pet is a long-term commitment with real costs. Do not adopt in early, unstable recovery. Visit a shelter, volunteer or foster first.
- **Replace, do not stack.** If a hobby starts to run on the same compulsive pattern (spending, secrecy, obsessive upgrades), treat it like any other signal.

Same money, different place

The money that went to the substance is already in your budget. A small share can fund the practice, for example a pot, soil, seeds, a starter kit, a class fee, or a few months of club dues. Do this after the essentials

in the Full Inventory financial triage are covered. If you cannot yet pay for essentials, use free options: library, community garden, shelter volunteering.

Starter protocol: do one small thing today

Target	First step	First return
Garden	One pot, one bag of potting mix, one packet of fast seeds (basil, radishes, lettuce). Plant and water them.	Sprouts in a few days
Animals	Visit a shelter or ask to volunteer, without adopting yet	Contact with an animal that responds to you
Fermentation (non-alcoholic) Make a small jar of	kombucha, kefir or sourdough starter	Visible change in days; a product in 1-2 weeks
Mushroom kit	One culinary oyster-mushroom kit	A harvest in about 1-2 weeks
Bees	Attend a beginner class through a local beekeeping association	A mentor community
Fitness or music	A first class, or a free software or session	A first completed practice

Enter the community as a **learner**, even if your old knowledge gives you an edge. Good places: local clubs (master gardeners, aquarium societies, bee associations, dog training clubs), library workshops, online communities for your hobby, and the staff at plant and pet stores, who are glad to answer questions.

Part 2: The Chrysalis

The idea

When a caterpillar enters its chrysalis, much of its body breaks down. A few clusters of cells, imaginal discs, survive and organize what remains into the adult. Some learned responses survive the process too. [Established biology; the recovery parallel is a **metaphor**.]

Recovery sometimes feels the same: the old structures dissolve (identity, routines, relationships) before the new ones form. The metaphor suggests:

- **The capacity for the new self was already there.** It was held in reserve, not created or destroyed by the addiction.
- **You are not starting from zero.** What you genuinely learned survives.
- **You are not returning to who you were.** The aim is a new form, not the old one improved.

- **The slow, uncomfortable part has a function.** Daily structure, financial triage, slow cognitive rehabilitation and heavy grief are the container, not signs you are in the wrong place.

A popular story says that cutting a chrysalis open to help a butterfly leaves it unable to fly. Treat that as a parable about not rushing the process, not as an instruction to refuse help. In recovery, medical care and support are never "interference." Ask for help.

Four things the process needs

Need	In recovery
Container	Early-recovery structure, safe housing, a daily routine, a natural place that can hold grief and fear
Permission	Letting yourself feel what you held back, without managing it for others
Witness	The part of you (or a therapist or friend) that can watch the feeling without being destroyed by it
Integration	Making meaning afterward: what this taught you

If the feelings are overwhelming, stuck, or involve thoughts of harming yourself, do not try to contain them alone. Call or text 988, or contact a therapist. Trauma-focused therapy may be needed.

Ten creatures as field notes

The Kernel offers ten animals as models. Choose the **one that best matches where you are now**, not the one you most admire. Learn it from real sources (field guides, documentaries, local naturalists). Return to it at 30, 60 and 90 days; the best match may change.

Creature	A fact	What it offers
Monarch butterfly	Migrates thousands of miles to a place it has never been, using sun, magnetic field and polarized light	You can navigate without a full map by integrating several kinds of guidance
Dragonfly Creature	Spends years as a water- A fact dwelling nymph before emerging	The slow stage is building What it offers wings, not wasting time
Salmon	Returns to its birth stream, and its body feeds the forest	Going back is not regression; you carry what you gained
Periodical cicada	Waits underground 13 or 17 years, then emerges all at once	Invisible years of rebuilding are not stagnation

Creature	A fact	What it offers
Hermit crab	Leaves an outgrown shell and is exposed until it finds a new one; shell-swaps pass down “vacancy chains”	The old identity can be outgrown; the in-between is vulnerable; your old shell may help someone else
Lotus	Grows from mud and sheds dirt from its surface	The hardest chapters can be the soil, not the obstacle
Crow	Remembers faces, plays, gathers around the dead, leaves small gifts for those who feed it	Memory, grief shared and unprompted generosity
Wolf	Lone wolves have high stress and poor outcomes; packs are family-based and cooperative	Isolation is an emergency adaptation, not your best self
Mycelium	Fungal networks link trees and move resources toward trees in need	You are less isolated than you feel; helping others is part of the network
Sandhill crane	Flies in rotating formation, with leaders changing as capacity allows	Sometimes you receive lift; sometimes you lead

The nature-study protocol

Time in natural settings reduces stress markers and rumination and improves mood for many people. [Emerging, with reasonably consistent evidence.] It is free, safe and works at any stage. Match the dose to your energy:

Time	Practice
10-20 minutes	Sit outside with no phone and no task. Name what you see without judging it. Good starting dose at any stage.
20-60 minutes Time	Walk without a destination, watching what is alive. Aim for a few times a week. Practice
90-120 minutes	Revisit the same pond, trail or grove, long enough to notice details.
Weekly, long-term	One natural place you return to through the seasons. A relationship, not an activity.
Signs of emergence	

These are signs, not tests. Do not use them to judge yourself.

Sign	What it looks like
The old shell no longer fits	The identity organized around the substance no longer feels like you, and you are between identities
Internal navigation	Decisions are less driven by guilt, others' approval or fear; your values and plans guide you
Giving and receiving	You can both ask for help and offer it
Unprompted generosity	You give from surplus, not as a performance
Letter to your imaginal discs	
Write privately:	

1. What were you always capable of that the old pattern could not express?
2. What do you know now that you did not know when you started?
3. What did the dissolution take, and what did it reveal?
4. Which creature describes where you are right now?
5. What does the person you are becoming need from you?

FOR CLINICIANS

- Both frameworks are narrative and motivational. They map onto behavioral activation, values work, meaning-making and nature-based interventions, and can sit alongside evidence-based treatment.
- Use caution: "same engine" language should not minimize disordered patterns, and "struggle makes you strong" should never discourage help-seeking or medication.
- Watch for hobby substitution that recreates compulsive patterns, and for new hobbies that expose a person to cues (bars, grow stores, a former supplier).

For families and supporters

- Help set up the practice (a pot and seeds, a ride to a class) rather than pushing a particular hobby.
- Celebrate small, concrete returns: a sprout, a finished project, a walk taken.
- Do not rush the quiet stage. Quiet is not always avoidance.

KEY POINTS

- Redirect the devotion, knowledge and routine that went into use. Do not try to delete them.

- Match the **function** the substance served, and avoid copying the old behavior.
- Start small today; enter communities as a learner.
- Pets and hobbies need stability. Do not adopt early.
- The Chrysalis is a metaphor: the new self is not the old one improved. Ask for help rather than going through it alone.
- Time in nature is a free, low-risk support.

Manning: standing the post

> **In this chapter.** Manning is the third stage of the Trinity (Clarity, Restoration, Manning). It means holding a post other people can lean on, as someone once did for you, or as you wish someone had. It comes after real stability. Here is how to know you are ready, what it can look like, and the boundaries it needs.

If you are early, unstable or in crisis, this is not your chapter yet. That is not failure. Come back later.

What Manning is, and is not

- To “man a post” is to hold a position others depend on, steadily, by choice.
- It is **not** graduation. Your own recovery work continues.
- It is **not** a debt paid with suffering, and not rescue. In sponsoring, the role is governance and witness, not fixing.
- It is a role you grow into, often years in, and it changes shape over time.

Are you ready?

Do not use time alone. Use the six-track dashboard from the Milestone Document. Readiness elsewhere is the precondition for starting this track.

Track	Where it should be before Manning	Why
Safety and medical	Maintenance or standing safeguard, not primary focus	Holding someone else’s crisis while managing your own medical situation asks too much
Cues and context Track	Maintenance; your triggers are known and manageable Where it should be before Manning	Exposure to someone else’s active use can destabilize you Why if yours are unpredictable
Natural architecture	Active and working, not aspirational	Your own practices should already bear weight

Track	Where it should be before Manning	Why
Underlying condition	Treated, with a working clinician relationship	Untreated conditions tend to worsen under added strain
Biology and genome	Results and medical plan in hand (not a blocker, but useful)	You can speak accurately about biology, including that a genetic risk does not equal destiny

The Kernel puts a rough marker at around **Year 5**. That is a Kernel projection, not a rule. Some are ready sooner; many need longer. The tabulation, not the calendar, is the test.

The cost of arriving too early is a failure mode the Kernel calls *baffoonery*: a senior person treating someone newer with mockery or condescension, often because the helper's own unresolved struggle gets projected outward. If you notice irritation, contempt or a need to be right when someone is struggling, step back and check your own tabulation.

What Manning can look like

- Sponsoring someone (witness, not rescue).
- Leading or co-leading a peer group (AA, NA, or another model).
- Informal mentoring: being the person someone calls at 2 a.m.
- Professional peer support. In many US states there is a credential such as Certified Peer Recovery Specialist.
- Writing, advocacy or building resources.
- Supporting a family that is not your own.

It does not have to be about recovery

The benefits come from real contribution, not from the label. If you do not want recovery to be a public identity, service that has nothing to do with substances is Manning in full.

Category	Examples	What it offers
Safety and rescue	Lifeguarding, volunteer fire or EMS, Red Cross disaster response, teaching CPR	Real responsibility and the vigilance skills recovery builds
Rebuilding	Habitat for Humanity, Rebuilding Together, disaster rebuild crews	Visible results, a team, a schedule
Fundraising and events Category	Charity walks and runs, nonprofit event logistics Examples	A shared, countable goal What it offers

Category	Examples	What it offers
Animals	Shelter volunteering, therapy-animal programs, wildlife rehabilitation	Connection without group-social pressure
Environment	Park cleanups, trail work, community gardens, conservation corps	Physical, visible, often solitary or small-group
Youth	Big Brothers Big Sisters, coaching, tutoring	Mentorship without disclosing your history
Food security	Food banks, Meals on Wheels, community kitchens	Direct, tangible help; flexible schedules
Hospital and hospice	Volunteer programs, hospice companions	Presence and witness within an existing trained structure
Arts and skills	Docent work, theater support, library reading programs, teaching a class	Contribution built on what you are already good at
Civic	Poll worker, local board or association	Structured, low-drama service with a clear start and end

Choose the one you will actually do repeatedly, not the one that sounds most impressive. Consider your own risk: avoid settings that expose you to your old cues.

Repurposing structure: match the function, not the form

Adults still run on structures set up in childhood. Many were never replaced on purpose.

Childhood form	Adult version	Underlying function
Teacher	Boss, mentor, sponsor, therapist	Guidance and accountability from someone further along
School bus and bell schedule	Commute, work or meeting times	Reliable, externally anchored routine
Lunch money	Budget	Bounded access to resources
Homework	To-do list, daily practice	Regular effort outside supervision
Report card	The Milestone Document's tabulation	Honest, periodic outside check

Childhood form	Adult version	Underlying function
PE class	Movement that suits you (solo at home, a walk, a Peloton-style bike)	Physical mastery and its natural reward, without the old shame
Recess Childhood form	Peer group or sober social Adult version circle	Belonging with peers Underlying function

If a need for structure, belonging, hierarchy and income is not directed anywhere legitimate, it can attach to the "discouraged side," such as dealing or theft, which can be highly organized. Manning here means helping someone find legitimate structures that serve the same functions. The mapping above is a method, not a prescription: ask what the old structure actually did for this person, and do not assume the obvious adult equivalent fits.

When joining sober culture re-triggers old wounds

School is where many people first felt exclusion. Being the one who turns down a drink, explaining an absence, or arriving alone to a new group can reopen that wound. [Emerging; research suggests social rejection engages pain-related brain regions.] Suspicion or pity from family and friends about the "in recovery" label can feel similar.

- **If this becomes hypervigilance, dread of sober spaces, or avoidance that isolates you**, tell a therapist. CBT is a standard, well-evidenced tool for the everyday version. If there are flashbacks or fuller trauma symptoms, trauma-focused therapy such as EMDR or trauma-focused CBT may be better.
- **One of the most concrete acts of Manning:** be the familiar person who arrives with someone at their first sober gathering. Arriving with someone changes the picture from "alone among strangers."

Manning also helps you

Teaching a skill deepens your own grip on it, and advocating for change tends to deepen your own conviction. [Emerging; consistent with learning and attitude research.]

Track	How Manning reinforces it
Safety and medical	Reviewing someone else's emergency plan sharpens your own
Biology and genome	Explaining that a genetic risk is not destiny re-teaches you
Cues and context	Helping map their triggers is a rehearsal for naming yours

Track	How Manning reinforces it
Natural architecture	Modeling a real practice strengthens your own adherence
Underlying condition	Encouraging someone toward treatment rehearses taking yours seriously
Identity and Manning	The loop closes: you practice being someone who helps

Service tends to engage reward, connection and social bonding (the same systems natural architecture rebuilds). **[Emerging] If it only ever feels like martyrdom, that is information, not something to push through.** Check timing, role and boundaries with a sponsor or therapist.

If it sticks, do you still need to practice?

When a change becomes automatic, that is a **standing safeguard**, and it is real progress. But "it stuck" is not the same as "I am healed." A behavior can stabilize while the need underneath it is still unaddressed, and any underlying vulnerability may remain. Years of stability followed by the belief that the vulnerability is gone is a known trap. The practice can get quieter. The vigilance rarely retires completely. Saying that plainly to the person you are helping is part of honest Manning.

Differences of opinion are normal

You and the person you help may disagree about pace, structure or philosophy. Your path is useful, but it is not their map. Disagreement is not evidence that the relationship is failing.

Boundaries Manning requires

- **Never become someone's only source of structure.** That leaves both of you exposed.
- **Keep your own tabulation going,** on your own schedule, the whole time.
- **Do not use someone else's crisis to avoid your own unfinished work,** such as amends or underlying conditions.
- **A "no" is allowed.** Not every request is yours to take on.
- **Keep your own D-Day and yearly observance.** Manning adds a role; it does not replace the private work.
- **Know the limits of your role.** In an emergency (overdose, suicidal thoughts, medical danger), call 911 or 988. You are not a clinician. Never give medical or taper advice; send people to a prescriber.
- **Do not share someone's story** without their permission.

The long arc

In the first years, Manning is deliberate and effortful. Over time it often becomes closer to identity than task: a phone that is always answered, a door that is always open. Some people turn it into paid peer-support work; others keep it entirely informal. The post does not have to be large to matter. It has to be held honestly, by someone who has done the work, for as long as they can hold it well.

FOR CLINICIANS

- Use the six-track readiness table as a conversation guide for patients considering peer roles. Premature Manning can destabilize both parties.
- Peer-support work needs supervision, boundaries and self-care plans.
- Consider whether the patient is using a helper role to avoid their own treatment.

For families and supporters

- Do not push a loved one into helping others before they are ready.
- Encourage non-recovery forms of service if they prefer privacy.
- Notice burnout, secrecy or neglect of their own plan. Those are signs to slow down.

KEY POINTS

- Manning is a stage after stability, not a rescue or a graduation.
- Readiness is shown on your own tracks, not the calendar.
- Service does not have to be recovery-specific.
- Match the function of a structure, not its form.
- Keep tracking your own recovery while you help.
- Keep boundaries and send medical questions to professionals.

PART 6. SUPPORTERS AND EVERYDAY

PRACTICE

Supporters and Practice

This part is for the people around a person in recovery (sponsors, families, group facilitators) and for the everyday tools people use: the meeting format, the intake form, the progress wallet, and safety guides for special situations. It is written for the United States. Crisis numbers: **911** (emergency), **988** (call or text), **Poison Control 1-800-222-1222**, **SAMHSA 1-800- 662-4357**, **Crisis Text Line: text HOME to 741741**. Outside the US, use your local emergency and crisis services.

Evidence labels used in this part. **[Established]** = widely accepted clinical fact. **[Emerging]** = plausible, with limited or mixed evidence. **[Kernel hypothesis]** = the Kernel's own framework or projection, not trial-tested. Untagged text is practical advice or well-established basics. The Kernel's outcome percentages are projections, not trial results. For the shared safety rules, see the Handbook chapter "The 12 Safety Rules".

Chapters in this part:

1. Sponsoring
2. Families and support networks
3. Boundaries and conflict
4. Meetings and starting a group
5. Intake and your personal card
6. Progress wallet
7. If you are incarcerated
8. Hangovers and impaired-activity safety
9. Alcohol-free drinks (the Bartender's Friend)

Chapter 1. Sponsoring

> **In this chapter.** What a sponsor does and does not do. How to point someone to the right guide, how to notice early warning signs before a crisis, how to run a calm review after a lapse, and when to stop and call for emergency help. Also: how not to burn out.

Not medical advice. A sponsor does not diagnose, prescribe, or manage a taper. Crisis: call or text **988**. SAMHSA: **1-800-662-4357**.

1.1 Your role: governance and witness

The Kernel uses two words for what a sponsor offers.

- **Governance.** You are the steady outside structure. You are not inside the craving when it fires, so you can see what the person in it cannot. You hold a line on days their own capacity is not enough.
- **Witness.** You see what actually happened without flinching, and without making it smaller or bigger. A lapse, a milestone, or an ordinary hard week then has somewhere real to land.

The edges of the role matter just as much:

A sponsor is not…	So you do not…
A doctor	manage medication, tapers, or diagnoses
A therapist	do trauma work or treat an underlying condition
A 24-hour crisis line	have to be reachable every hour to do the job well
The only structure	try to become the person's whole support system

Nothing here replaces what AA, NA, or similar programs do well: the standing relationship, the accountability, the value of a date. The Kernel adds a few tools underneath: a biological view of lapses, tracking progress on more than one number, and shared vocabulary if the person is also using the Kernel.

1.2 Getting someone to the right guide

1. Sit down and ask plainly what they have been using.
2. Match it to the substance or behavior chapter in the Reference Library. 3.**More than one substance?** Start with the most dangerous: alcohol, benzodiazepines, GHB, or opioids. Withdrawal and overdose risk do not wait. 4.**Unknown or unverified supply?** Treat it as the highest-risk situation. Counterfeit pills and powders may contain fentanyl, nitazenes, xylazine, or medetomidine. See the fentanyl and opioid chapters. 5.**Behavior plus substance?** Open both, but let the higher-danger substance set the immediate safety plan. 6.**They will not name everything?** Make honesty easy. Your job is to make it safe to say, not to extract it. Full honesty with a clinician is what keeps every later step safe.

1.3 Starting before things are out of hand

Nothing in the Kernel requires a crisis as the price of admission. The same basics (sleep, food, movement, structure, knowing your risks) work as prevention. A sponsor is often the one who notices an early moment and says so.

If this describes the person	Why it is a good early entry point	What to do now
A parent, sibling, or close relative has an addiction	Family history is a real risk signal	Read the relevant chapter early; tell prescribers about the family history

If this describes the person	Why it is a good early entry point	What to do now
A new prescription for an opioid, benzodiazepine, or stimulant	The easiest time to set rules is before a pattern forms	Read that chapter's first steps; ask the prescriber about duration and exit plan
A major transition: college, divorce, bereavement, retirement, new chronic pain	Transitions raise risk even with no history	Build routine, sleep, and contacts before the change
A high-exposure setting: bartending, hospitality, medicine, nightlife	Access and normalization are strong pressures	Plan limits and an exit before it becomes routine
Early patterns: using to manage a mood, planning the day around access, needing more for the same effect	This is a warning sign, not yet a lapse, and the easiest time to act	Name the pattern; open the relevant chapter now
Watching someone else go through it	A common, low-drama reason to take an honest look	There is no wrong reason to start

A guidebook, not a fellowship. AA and NA ask for a standing identity and belonging. That helps many people, but it is a big step to take "just in case". The Kernel can be read privately, like a manual, before anything has gone wrong. A sponsor can hand someone a chapter without asking them to take on a label.

1.4 "It does not run in my family"

[Established] Genes contribute substantially to addiction risk (twin studies put heritability at roughly 40-60% depending on the substance). [Established] No current genetic test can calculate an individual's addiction risk.

[Kernel hypothesis] The Kernel uses the phrase "DNA debt" for inherited vulnerability that may never show. Three points follow, and they pull in opposite directions:

- A clean family history is not proof of low risk. Relatives may have had problems that were never named, or may never have met the circumstances that bring risk out.
- A risk variant is not a sentence. It shifts probability. It does not write an outcome.
- A "clean" test result is not clearance. Panels check a limited set of known variants, and circumstances (access, trauma, stress) can cause harm without any special genetic loading.

If someone says "I'm probably fine, it's not in my family," you can gently point out that this is a guess, not a fact. Do not tell them they are immune or doomed. Never delay getting help while waiting for a test.

1.5 Be a witness, not a judge

The Kernel has a name for sponsors turning accountability into mockery or dismissal of a struggling person. The test is simple: does your response address the behavior while leaving the person's dignity intact? Direct, hard truths pass that test. Sarcasm and "you people always say that" do not.

- Ask before concluding. "What happened?" gets a more honest answer than "Why would you do that?"
- Name the behavior, not the person. "That was a lapse" lands differently than "you're back to your old self."
- Keep your own story short. Your history is context, not the center of the conversation.
- If you notice contempt in yourself, ask what it protects you from. It is often distance from your own unresolved material.

1.6 Reviewing a lapse together

The Kernel replaces a single "days clean" counter with a review across several areas, so a lapse can be looked at honestly without denial and without collapse. **A lapse is information, and it is also a medical risk** (tolerance drops fast; see below). Your job is to hold the structure, not fill it in.

1.**Grade it.** Variance (a wobble, no use), minor lapse, material relapse, major restatement of the plan, or emergency. If it is an emergency, go to section 1.7. 2.**Go area by area and let them answer first:**

- oSafety and medical
- oBiology (sleep, food, medication, genetics if known)
- oCues and context (people, places, times, feelings)
- oNatural architecture (the everyday things that give reward and calm: movement, friends, purpose, light, food)
- oUnderlying condition (depression, ADHD, anxiety, trauma, pain)
- oIdentity and Manning (taking the helm of their own recovery)

3.**Ask what is still standing** before asking what has to restart. 4.**Write down what they say**, not what you think they should say. 5.**Remind them what does not move.** The date their effort began (their "D-Day") does not reset. A lapse changes today's dashboard, not when the work started. 6.**Check safety first.** After any gap in opioid, benzodiazepine, or alcohol use (a lapse, a hospital stay, jail), tolerance is lower. Returning to the old amount is a leading cause of fatal overdose. Make sure naloxone is within reach. See the 12 Safety Rules.

The yearly observance. Some people mark their D-Day each year with a short written account of the year's real progress and of what they have grieved. Your role is witness, not author. Listen to both parts without tidying either one.

1.7 Where your role ends

In each case below, your job is to get the person to emergency care, not to manage it yourself.

If you see thisDo this now

Cannot be woken, slow or stopped breathing, Call **911**. Give naloxone if you have it; if there pinpoint pupilsis no response after a few minutes, give another dose as the device instructions say. Naloxone does **not** reverse xylazine or medetomidine, and nitazene overdoses can need repeat doses. Keep giving rescue breaths and stay on the line.

Seizure, or withdrawal from alcohol, benzodiazepines, or GHB after regular heavy use	Call 911. Never advise stopping any of these suddenly.
Chest pain, or a racing or irregular heartbeat that will not settle	Call **911**
Lost track of what is real: voices, commands, persecutory beliefs	Call **911** or go to an emergency department; say which substance if known. Psychosis needs psychiatric care.
Severe agitation with overheating and risk of collapse	Call **911**. Do not try to restrain them yourself.
Any mention of suicide or a plan If you see this	Call or text **988**. Stay with them. Call **911** if there is imminent danger. Do this now
Possible acetaminophen (paracetamol) overdose, including in combination products	Call **Poison Control 1-800-222-1222** or go to the ED **before** symptoms appear. Supplements are not treatment.

1.8 Quick flags when the substance is not your own

Read the person's own chapter. This table is only what to know before the first hard conversation.

Category	Know before you talk
Alcohol, benzodiazepines, GHB	Never support or suggest stopping suddenly after regular heavy use. Withdrawal can be medically dangerous, including seizures. This is always a medical decision.
Opioids (including fentanyl, kratom, 7-OH)	Any gap in use resets tolerance. Keep naloxone accessible however stable things look. Unverified supply is a major danger.
Methamphetamine, cocaine, crack, other stimulants	The comedown, not only craving, drives relapse. Redosing during a comedown is the highest-risk moment.

Category	Know before you talk
MDMA, LSD, psilocybin, ketamine, DXM, PCP	A personal or family history of psychosis is a serious flag. Support a psychiatric evaluation if perceptual symptoms last beyond about 48 hours after use.
Cannabis, nicotine, caffeine	Lower acute danger, but withdrawal is real and often dismissed. Irritability and poor sleep in the first weeks are expected. Quitting smoking can change levels of some medications (see Chapter 8).
Gambling, shopping, gaming, compulsive sexual behavior	Access and friction matter as much as for substances. A trusted-holder arrangement for money, or an accountability structure, is the equivalent of naloxone here. If any behavior harms or involves children or non-consenting people, urge confidential professional help and legal advice at once. For gambling crises, 988 also applies.
1.9 Sponsoring across difference	

Your own recovery is real but it is not a map of theirs. A different substance, genetic profile, history, or culture can mean what worked for you does not transfer. Offer your experience as one data point. Ask where their situation differs. A comedown you have never felt is easy to underestimate. Trust their chapter over your memory.

1.10 Looking after yourself

- Encourage more than one source of structure (a clinician, a group, other peers). A sponsor who becomes the only support leaves both people exposed.
- Keep your own accountability going. An unsupported sponsor drifts into overextension.
- Ask yourself honestly what this relationship costs and gives.
- Handing someone to another sponsor, program, or clinician is not abandonment when the match is not working.

> **KEY POINTS**
>
> Key points: Sponsoring

- You are governance and witness, not doctor, therapist, or crisis line.
- Open the guide for the most dangerous substance first.
- A lapse is information and a medical risk. Check tolerance and naloxone first.

- Call 911 for the emergencies in the table; never advise stopping alcohol, benzodiazepines, or GHB suddenly.
- Offer your experience as one data point, not the answer.
- Keep your own support in place.

Chapter 2. Families and support networks

> **In this chapter.** A plain-language guide for partners, parents, children, and friends: what the Kernel is, what your person may be going through, what helps, what makes things harder even when it comes from love, and when to get help fast.

Not medical advice. Crisis: **988**. Emergency: **911**.

2.1 What the Kernel is (and is not)

The Kernel is not a 12-step program, a religion, or a therapy. It is a framework built on one idea: for many people, addiction began as the brain's attempt to solve a real internal problem, such as constant low energy and motivation, anxiety that never settles, or weak "brakes" on impulses. **[Kernel hypothesis]** Part of that may be shaped by inherited variants. This is a hypothesis. Addiction is also shaped by trauma, access, stress, and environment.

It does not excuse harm. It explains a mechanism and then looks for safer ways to meet the same need. That takes months, not weeks.

2.2 Your person's "brain type" (a working model)

The Kernel uses four everyday labels. **[Kernel hypothesis]** They are a way to talk about patterns, not diagnoses, and they are not confirmed by genetic tests unless a clinician has actually run and interpreted one.

Type	What they may experience	What helps
Warrior (Kernel links this to fast dopamine clearance)	Flat and bored unless something is happening. Needs challenge, novelty, movement. Stimulants may have felt like the first normal focus.	A life with stakes and motion. Routine with no variety can feel like punishment. This is not immaturity.
Worrier (slow stress-chemical clearance)	Chronic anxiety that stays for hours or days. Alcohol or sedatives may have been the first calm they ever felt.	Calm, predictable surroundings. Reducing noise and demands is real treatment, not coddling.

Type	What they may experience	What helps
Depleted (Kernel links this to a "supply" problem)	Tired, foggy, low mood, antidepressants that did not work. Substances felt like "finally normal".	Patience. The first weeks of a rebuilding plan can feel harder, not easier.
Weak brakes (Kernel links this to a GABA-system trait)	Knows a decision is bad and cannot stop the action.	Believe them when they say they could not stop. It is not an excuse. It explains why structure matters.
2.3 What actually helps		

- **Stability.** A predictable, low-drama home where they can do the work.
- **Ask, do not assume.** "How are you doing today?" beats "You seem off."
- **No deadline.** Asking "when will you be normal?" implies they are not. The Kernel's own plan is a 12-month arc **[Kernel hypothesis]**, and real life can run longer or shorter.
- **Learn the basics.** Reading the Kernel's overview, or any good recovery resource, changes how you read behavior.
- **Celebrate small.** A week of regular sleep or one exercise session is real work. Say so out loud.
- **Keep naloxone at home** if opioids are or were involved. Learn how to use it. It does not reverse xylazine or medetomidine, so still call 911.

2.4 What makes things harder (even from love)

Instead of…	Why it backfires	Try
Repeating how worried you are	Once is care. Daily is pressure, and it adds stress.	Say it once, then offer a specific help.
Counting their pills or supplements	It becomes surveillance.	Ask what support they want from you.
Comparing them with others in recovery	Different people, different timelines.	Compare them only with their own earlier weeks.
Moral framing ("why don't Instead of…	It turns a health problem into Ask what they need this Why it backfires	Try
you just choose to stop?")	a character verdict.	week.
Removing everything hard suddenly	Some people need structured Keep manageable stakes in challenge; flat days can raise risk.	their life.

2.5 Conditions that often travel with addiction

[Kernel hypothesis] unless marked. The Kernel proposes shared biology behind several of these. Treat them as reasons to talk with a clinician, not as a self-diagnosis.

Condition	What to know	What it means practically
ADHD	[Established] ADHD and addiction often co-occur.	A person with both is not "overmedicated" or "drug-seeking" just because they need treatment. A prescriber decides.
PTSD / trauma	[Established] Trauma raises addiction risk.	Trauma-informed care matters. Pushing someone to relive trauma without support can raise craving, so go at their pace with a trained clinician.
Depression / anxiety	[Established] Common co-occurring conditions. **[Kernel hypothesis]** Some "treatment-resistant" cases may involve metabolism or nutrient factors.	A failed antidepressant is not a moral failure. Ask the prescriber about other options and interactions.
Chronic pain	[Established] Some people metabolize certain pain medicines unusually (e.g. codeine, tramadol), and pain management failures can lead into addiction.	They need a prescriber who knows their medication history. A pharmacogenomic test (if their clinician orders one) can inform this.
Eating disorders and behavioral addictions (gambling, screens, shopping) 2.6 When to get help now	[Emerging] Trading one compulsion for another is common.	Swapping substances for behaviors is not progress by itself. Support the whole pattern.

- **Call 911:** tremors, sweating, confusion or any seizure during alcohol or benzodiazepine withdrawal; unresponsive, slow breathing, or blue lips after an unknown substance (give naloxone if you have it).
- **Call or text 988:** any talk of suicide.
- **Tell their clinician or group facilitator** (ideally with their knowledge) if: they return to use (this is clinical information, not a moral failure); anxiety, depression, or mood seems to be worsening on a supplement plan; they stop attending and become isolated. Isolation is a relapse warning sign. Check in warmly rather than leaving them alone with it.

2.7 Support for you

Free, confidential help for families: **SAMHSA 1-800-662-4357** (24/7); **Al-Anon** (for families of people with alcohol problems); **SMART Recovery Family & Friends**; **NAMI** (family support); **988** for you too.

You did not cause this. You cannot fix it. What you can do is make the environment around their plan work better or worse. Loving someone in recovery is an endurance event. Being tired, angry, grieving, and hopeful all at once is normal.

KEY POINTS

Key points: Families

- The Kernel's brain types are a working model, not diagnoses.
- Stability and patience help most. Daily worry, surveillance, and moral framing hurt.
- Keep naloxone at home if opioids are involved, and know the 911 and 988 triggers.
- A return to use is clinical information, not a verdict.
- Get support for yourself.

Chapter 3. Boundaries and conflict

In this chapter. How to hold clear, respectful limits and how to work with friction in a group (or a family) without panic, blame, or rupture. Written for facilitators and useful for anyone who supports someone in recovery.

3.1 What a boundary is

A boundary is not a punishment or proof that someone is difficult. It is a condition for workable contact. It says where consent, capacity, scope, and responsibility actually are. In a group, boundaries protect honest participation: people can stay present without erasing themselves or performing agreement.

Boundaries can be spoken by a participant, held by a facilitator, built into the meeting's structure, or named for the whole room. They can cover:

- touch, physical space, time, and pacing
- how much to disclose, and whether anyone must explain themselves
- advice-giving, feedback, and emotional labor
- confidentiality and contact after the meeting
- topic scope: medical claims, crisis content, graphic detail, romantic pursuit

Without boundaries, groups drift toward being blurred, overexposed, rescuing, or quietly coercive. With them, a room can hold warmth, grief, humor, disagreement, and silence without turning any of them into an obligation.

3.2 Noticing boundary pressure

People rarely say “boundary.” Watch for:

- agreeing too quickly, laughing while uncomfortable, freezing, over-explaining, apologizing for a limit
- going compliant in a way that looks drained rather than chosen
- repeated questions, advice disguised as care, spiritual language used to push openness
- a group mood that makes saying no feel disloyal

Treat these as information, not obstacles.

3.3 How to say it

Keep it plain and specific. Simple language gives a clear edge without inviting debate.

Situation	Useful phrases
A person needs a limit	“That is not a yes.” “You may pass.” “You can name the limit without explaining the whole story.”
Too much detail	“We do not need more detail than that.” “We are not going into graphic detail.”
Room drifting	“We are going to pause advice-giving here.” “That topic is outside today’s scope.” “Let us slow this down.”
Something needs more care than the room can give	“This is important, and it needs a safer container than we have right now.”
Silence	“Please do not read silence as consent.”

Facilitator steps. Slow down. Name the boundary plainly. Protect it without making the person defend it. Help the room carry on inside the new edge. Do not make it a group debate unless it affects shared safety.

Individual versus room. An individual boundary protects one person’s consent, capacity, or dignity, and they do not have to justify it. A room boundary protects the shared container (for example, when the group is moving too fast, getting voyeuristic, or treating one person’s story as material for everyone else).

Limits of boundaries. A boundary does not guarantee comfort or agreement. It should not be used to control others, avoid all discomfort, punish vulnerability, or shut down real accountability. Be specific about what you need and honest about whose capacity or responsibility you are naming.

Do not: shame people for needing limits; romanticize “no boundaries” as intimacy; pressure disclosure in the name of honesty; treat a soft yes as stronger than a clear no; use belonging as leverage against a limit; read silence, politeness, laughter, or compliance as consent.

3.4 Conflict

Conflict is not automatically a failure. Sometimes it is the room becoming visible. Avoid it and the room turns false, passive, or quietly resentful. Indulge it without containment and the room becomes chaotic or punishing. The aim is to keep people in contact with difference without collapse or attack.

Early signs: interruption, cross-talk, rising volume, tightening posture, moral certainty, sarcasm, side-taking, withdrawal, looping accusations, or people talking about each other instead of to each other.

Early moves (intervene early):

1. Slow the pace.
2. Name that tension is present ("There's friction here. Let's slow down.").
3. Reduce overlap: one voice at a time.
4. Invite direct language from experience, impact, need, or boundary. Steer away from mind-reading, character judgment, and "everyone thinks" claims.
5. If two people carry the charge and the rest orbit them, narrow the focus so it does not spread. If the whole room is involved, address the whole room.

Your role: protect process and contact. You are not prosecutor, referee, or rescuer, and you are not there to win for either side.

Repair does not always mean agreement. It can look like clarity, a boundary, a pause, or acknowledgment.

Do not: pretend conflict is not happening; rush to peacekeeping that erases the real issue; let the room split into camps without naming it; confuse intensity with truth; carry on once the frame can no longer hold safely. If someone is in danger, switch to safety (see Chapter 4, hard situations).

> KEY POINTS
>
> Key points: Boundaries and conflict

- A boundary is a condition for contact, not a punishment.
- People should not have to defend a limit to have it respected.
- Plain language works best: "You may pass."
- In conflict, slow down, name it, one voice at a time.
- Safety comes before content.

Chapter 4. Meetings and starting a group

> **In this chapter.** The Kernel meeting format (about 60-90 minutes, with a 45-minute version), the 12-meeting starter curriculum, and a practical guide to starting your own group from zero.

A Kernel meeting does not replace treatment. It is peer support and skill practice. Anyone with withdrawal danger, suicidal thoughts, or psychosis needs medical or crisis care. Post **911** and **988** where everyone can see them.

4.1 Why the format is built this way

The meeting is designed so that everyone can take part regardless of reading ability or recovery knowledge. The facilitator reads the script. Participants respond, share, and take part. They never have to read aloud unless they choose to. The meeting puts people through practices first; understanding catches up with experience.

Differences from many other recovery meetings: every person speaks in the same short format; there is no long testimony, no cross-talk, and no applause for pain; and there are no streaks to defend. The check-in is a data read: where is your system right now?

4.2 The four-part meeting

Phase	Time	What happens
1. Opening	~10 min	Facilitator welcomes the room. Everyone drinks water (get some if you do not have any). One slow breath together (in 4 counts, hold 4, out 6). The purpose statement is said together. One sentence from the Kernel is read; ask if it lands, and do not push.
2. Check-in	15-20 min	Everyone speaks, same format. The facilitator models it first. After each person the room says “[Name], we hear you.”

Phase	Time	What happens
3. Practice session Phase	25-35 min Time	One topic from the Kernel, explained in plain language in What happens about 2 minutes. Then a guided exercise or discussion (20-25 min), then a 5-minute reflection: "What did you notice? One word or one sentence."
4. Close	~10 min	Facilitator names what actually happened in the room (2-3 honest sentences, not praise). Each person names **one thing** they will do before the next meeting. Closing words together.

Purpose statement (said together): We are not broken. We are running on biology that was never properly explained to us. We are here to understand that biology and build a life that works with it. Not through willpower, but through knowledge, practice, and each other.

Closing words: The biology can be understood. The pattern can be changed. The work is real and the work is worth doing. Come back.

The statement "we are running on biology" is a **[Kernel hypothesis]** framing. Keep it as encouragement, not as a medical claim, and do not let it replace medical advice.

4.3 The check-in

Three questions, 30 seconds each at most:

1. Your first name.
2. One word for how your body feels (tired, tight, steady, wired, heavy…).
3. One sentence: what you need from this meeting.

Facilitator notes:

- **No cross-talk.** The only response is "[Name], we hear you."
- **Someone tells their whole story?** "Hold that. Right now just: name, body, one sentence of need."
- **Someone passes?** "Completely fine. We'll come back if you want."
- **Someone becomes distressed?** "You're in the room. You're safe right now. Name, body, one sentence. That's all we need from you."
- **Groups over 15:** name plus one word only. Keep "what I need" for a smaller circle.

4.4 Opening sentences (rotate one per meeting)

1. You were not weak. You were running on the wrong repair manual.
2. Recovery is not about becoming someone different. It is about understanding who you actually are.
3. Crises are not evidence that you are broken. They are evidence that you have a nervous system.
4. The substance was solving a problem. Recovery means finding a better solution to the same problem.
5. What you needed was real. The way you got it was the only way you knew.
6. The biology can be supported. The bottleneck can be bypassed. **[Kernel hypothesis]**
7. Your brain learned to optimize for something that harmed you. The same brain can learn to optimize for something that doesn't.
8. You cannot think your way out of a chemistry problem. But you can address the chemistry. **[Kernel hypothesis]**
9. Isolation is a logical response to a depleted nervous system. Connection is the way back.
10. The repair takes time. The time passes anyway.
11. This state is temporary. It has always been temporary.
12. You are doing this.

4.5 The 12-meeting starter curriculum

One practice per meeting. Nobody needs to have attended earlier meetings; someone can walk in on meeting 7 and still benefit. These are not the 12 Steps and there is no moral progression.

#	Topic (plain-language name)	What people leave with
1	Emergency plan: what to do when everything crashes	A personal emergency plan; 911 and 988 written down; a quick body check (hungry, angry, lonely, tired)
2	Sleep	One sleep change made; understanding that sleep loss raises relapse risk
3	Eating for your brain	One nutrition change; understanding that hunger amplifies every bad state
4	Mapping cravings and triggers	A trigger map (times, places, feelings, people) and one way to interrupt it
5	Why you pull away, and the way back	Their isolation pattern named; one low-stakes way back toward people

#	Topic (plain-language name)	What people leave with
6 #	Rebuilding reward Topic (plain-language name)	What the substance gave them; one real-world replacement What people leave with
7	Sound and music	A personal playlist plan for crisis, calm, and motivation
8	How the brain changes	Repetition as the mechanism; one new habit under way
9	Family and the people who love you	Their family role named; one boundary that would help
10	Reading a relapse without shame	A way to treat a relapse as data
11	Meaning without requiring a god	One source of meaning that does not depend on a substance
12	"What kind of brain do I have?"	A working Warrior/Worrier self-description (see Chapter 5)

After meeting 12 the group chooses two things: which topic to go deeper on, and whether anyone is ready to facilitate. An extended curriculum can follow: social environment, exercise by brain type, gut and mood, hypervigilance, intrusive thoughts, "when calm feels wrong", money after addiction, returning to work, non-opioid pain approaches, reviewing medication with your prescriber, drawing boundaries, and going further in stable recovery.

If no topic is assigned: the Three Columns. Give everyone paper. Column 1: what I used to get from the substance (calm, energy, belonging, courage, pain relief, sleep). Column 2: what I have now instead (it can be nothing; that is honest). Column 3: one thing that might go in column 2. Ten minutes alone, then one word or sentence each.

4.6 Finding your starting point

What you are living with nowWhere to start

Thinking of harming yourself or someone else Call **911** or text **988** now

In withdrawal, hands shaking, or you have Medical emergency: **911** had seizures before

Just used after a period cleanEmergency plan first, then reading a relapse without shame

Cannot sleep, or sleep all the time	Sleep
Keep relapsing and do not understand why	Reading a relapse, then mapping cravings
Clean but flat, gray, bored	Rebuilding reward, then "what kind of brain do I have?"

Cannot sleep, or sleep all the time	Sleep
Anxious all the time	Quieting intrusive thoughts, then brain type
Body feels terrible (stomach, low-grade sick) What you are living with now	Gut and mood, then nutrition (and see a Where to start doctor)
In pain and scared of opioids, or already dependent	Pain without opioids, with a prescriber
Medications not working	Reviewing medications with your prescriber
Phone, gaming, gambling, sex, or shopping	Behavioral addictions, then digital detox
Do not want AA but need community	Meeting alternatives (SMART and others)
Pulling away from everyone	Isolation
Family making it harder, or parenting in recovery	Family dynamics and boundaries
Money stress driving use, or lost job	Money after addiction; returning to work
Just released from jail	Starting over from nothing (see Chapter 7)

Three stages. These are guides, not gates; you can be in all three at once.

- **Stabilization (about days 1-90).** Get safe. The floor: three nights of sleep in a row, at least one meal a day, and one person who knows what is happening.
- **Reconstruction (about months 3-12).** Rebuild: gut, reward, movement; patterns and relapse review; relationships; brain retraining. One topic a week, deep rather than fast.
- **Integration (year 1 onward).** Life is the project now: optimization, identity, purpose, peak function.

4.7 Starting a group: before you begin

Ask yourself three questions.

1.**Why am I doing this?** Good reasons: you want to offer what helped you, you see a gap, you think people deserve a biology-first approach. A bad reason: to fix someone specific, such as a family member or partner. That produces the worst outcomes for everyone. 2.**Am I stable enough to hold the container?** You do not need years of recovery. But when something hard happens you must be able to stay present. If your own recovery is early and fragile, wait for at least 3-6 months of reasonable stability. 3.**Do I have at least one other person?** A group of one is not a group. Confirm two or three interested people. Three to six is ideal. Presence matters more than headcount.

You do not need a clinical credential. You need to know the format, be able to spot when something needs to stop, and know what is outside your scope. You are not the participants' therapist, sponsor, or authority. You hold the structure and you connect people to **911**, **988**, or their prescriber when needed.

4.8 What you need

- A printed script of the meeting format (facilitator only)
- The printable intake form and brain-type card for each participant (see Chapter 5)
- A plain-language glossary for anyone who wants it
- A grounding guide and the boundary and conflict guidance (see Chapter 3), read before the first meeting
- Water for everyone: the opening ritual depends on it
- Chairs in a circle. No rows, no stage, no front.
- Emergency numbers visible: 911 and 988
- The Clinician Brief, which any participant can give to their doctor

A deeper, trauma-heavy, or role-play style of exercise should wait until trust exists, and should only be led by someone trained for it.

4.9 Finding participants

You are looking for people who tried standard approaches and found them insufficient, or who are curious about biology, or who are skeptical of religious framing. Be honest that the Kernel is a framework, not a proven treatment.

Where	How
Existing recovery communities	Talk to people after meetings: “I’m starting a group for people who’ve tried other approaches and found something missing.”
Harm reduction organizations	Partner with outreach workers and naloxone distributors. People who are currently using are welcome.
Online communities and local groups	Share the materials and let them speak for themselves
Hospitals and treatment centers	Offer the facilitator guide and intake form to discharge coordinators
Libraries, including prison libraries	Materials are public domain and can be donated. Institutions need approval first.
LGBTQ+ centers	The format suits communities carrying higher minority stress. No shame framing is needed.
Healthcare providers	Give providers the Clinician Brief and ask them to refer suitable patients
4.10 Choosing a venue	

Choose a room that sets a calm tone before anyone speaks:

- Reachable by public transit (attendance drops if people must drive 45 minutes)
- Chairs that can form a circle
- Space to move
- Low sensory noise: natural light, no loud air systems or fluorescent buzz
- Private enough for honesty, with a door that closes
- Available at the same time every week

Venue	Best for	Note
Community center room	Stable recurring access	Often free for registered community groups
Public library meeting room	Small groups of 3-10; people returning from prison	Free, accessible, low stigma
Faith community space	When nothing else is available	Say clearly from the first outreach that the group is secular; review any conditions
LGBTQ+ community center	LGBTQ+-specific groups	Often has referral networks
Treatment center conference room	Built-in referrals	Needs a relationship with staff
Online	Rural areas, mobility limits	Movement exercises translate poorly
Correctional facility library	Highest-need population	Needs institutional approval
4.11 The group charter		

Read aloud at the first session and post where all can see it. In short:

This is a Kernel group. We are here because standard answers did not work for us, not because we did not try hard enough. We are biology-first and we ask you to understand, not to surrender. You do not have to be sober or a certain number of days clean to be here. You have to be willing to try to understand why. What is said here stays here. You will not be diagnosed, judged, shamed, or pressured. Honesty is the only requirement. The facilitator is not your therapist, sponsor, or authority. They hold the container. We meet at [day and time] at [venue] and close at [end time]. In a medical emergency call 911. In a mental health crisis call or text 988. The facilitator will connect you, but is not a substitute.

“Currently using is welcome” is a harm-reduction stance. It does not mean ignoring danger. If someone describes heavy daily alcohol, benzodiazepine, or GHB use, tell them privately that stopping suddenly can be dangerous and help them reach a prescriber.

4.12 Your first six sessions

#	Focus	What to do
1 #	Intake and opening Focus	Read the charter. Do the introduction ritual (Chapter 5). Complete intake forms. One short, light activity. No What to do deep content: safety first.
2	"What kind of brain do I have?"	Introduce the Warrior/Worrier model **[Kernel hypothesis]**. Walk through the questions together.
3	The "supply system"	Explain, in plain language and with a story, how nutrition and metabolism might affect mood **[Kernel hypothesis]**. A grounding practice.
4	The "braking system" (if relevant)	Only after trust exists. The questions can bring up strong reactions: have crisis numbers visible and say them aloud. A history of withdrawal seizures is medical information for a clinician.
5	First creative session	A longer session (up to about 2 hours) that makes a shared group artifact.
6	Review and peer pairing	First look at progress-tracker data (Chapter 6). Pair experienced and newer participants for contact between sessions.

4.13 When hard things happen

Situation	Do	Do not
Someone shares they used this week	Thank them for honesty. "Let's look at what triggered it." Use it as data. Ask about tolerance and naloxone if opioids were involved.	Say "you broke your streak" or count days. The Kernel measures direction, not streaks.
Someone is in acute crisis	Slow down. Ask "Are you safe Keep running the session. right now?" Connect to 988 or 911.	Safety comes before content.

Situation	Do	Do not
Conflict erupts Situation	Use Chapter 3. Slow down; one voice at a time. Do	Take sides or smooth it over. Do not
Someone discloses trauma unexpectedly	Move to grounding. Close the Carry on as planned. content work. End with safety.	
You are having a hard night	Say so: “I’m having a harder time holding the container tonight. Let’s take a breath together.”	Push through while dysregulated.
A participant stops coming	Reach out once: “We noticed you weren’t there. You’re welcome back.” Then let it go.	Chase, guilt, or shame.

4.14 After the first year and facilitator self-care

After year one. The Kernel’s plan is a 12-month arc **[Kernel hypothesis]**. After that a group may continue with advanced topics, shift to informal peer support, or end because the work is done. All are fine. The goal was never a group people cannot leave. If someone has finished their arc, “you’ve done it, you’re not bound to keep coming” is an honest thing to say. Supplements are not meant to be forever or an obligation; any plan involving them belongs with a prescriber or pharmacist.

Facilitator self-care. You cannot hold the container if you need to be held.

- Do your own intake and tracking. You do not get to skip them.
- Have a debrief contact outside the group.
- Take sessions off, and name a co-facilitator early enough to use them.
- Burnout is a relapse risk, not a professional setback.
- Use **988**, **911**, and your own prescriber if you need them.

Becoming a facilitator. There is no certification. A good sequence: attend a full 12-meeting cycle as a participant; read the script until you can look up and make eye contact; run the format once with 2-4 people first. The key skill is holding time: 30 seconds per check-in, an exercise that stays on track, a close that is unhurried.

> KEY POINTS
>
> Key points: Meetings and starting a group

- Four parts: opening, check-in, practice, close. Everyone speaks in the same short format.
- Twelve starter meetings; each stands alone.

- You need a stable facilitator, at least a few people, a circle, water, and visible 911 and 988.
- Safety always comes before content; a lapse is data, not a broken streak.
- A group supports treatment. It does not replace it.

Chapter 5. Intake and your personal card

> **In this chapter.** What the Kernel intake form asks and why, how to answer it, what the "Kernel Code" is and is not, and how the brain-type card and four-line introduction are used in groups.

5.1 What the intake form is

The intake form is a self-reflection questionnaire. It builds a working picture of how your brain and body respond, from your own experience, so you can start without waiting for lab results. **[Kernel hypothesis]** It is not a diagnostic test and it does not detect genes. It gives a starting point for conversation with a facilitator or clinician. Never delay care or a prescriber visit because of a score.

The one rule: answer as your baseline self. Not in withdrawal, not in a crash, not when you have just used. Answer as the person who wakes up on an ordinary morning before anything chemical happens.

Use initials or a nickname if you want. Nothing is required.

5.2 What it covers

Section	What it asks	What it is for
About you	Name or nickname, age range, how you got here, prior programs	Context only
Substance history	Every substance that has been a significant part of your life, not only the current one; how it first felt ("finally calm", "finally focused", "finally normal", "high")	Past patterns are information. "Finally calm/normal/focused" is a clue, not a flaw.
Supply and mood	Early depression or anxiety, antidepressants that did not work, fatigue, brain fog, headaches, chronic pain	**[Kernel hypothesis]** A "methylation proximity" score linked to the Kernel's MTHFR idea
Stress and reward	Anxious/ruminating versus flat/bored/novelty-seeking	**[Kernel hypothesis]** A Warrior/Worrier lean (COMT)

Section	What it asks	What it is for
Impulse control and alcohol/benzodiazepine risk	Cravings you cannot stop, blackouts, trauma or adversity, early onset, family history, withdrawal seizures	[Kernel hypothesis] A "braking system" score linked to GABRA2. Has a medical flag (below).
Medication reactions Section	Codeine or tramadol that did not work or made you very sick, antidepressants that failed, unusual reactions to What it asks anesthesia, 3+ regular medications	Flags for a prescriber or pharmacist. [Established] Unusual drug responses can reflect liver-enzyme (CYP450) What it is for differences, and testing exists.
Baseline now	Mood, energy, sleep, anxiety, craving, motivation, clarity (1-10)	Your starting numbers for the progress wallet
Current medications	Everything: prescribed, over-the-counter, and supplements	Interaction checks

5.3 Medical flags: tell someone the same day

- **Withdrawal seizures or extreme withdrawal from alcohol or benzodiazepines**, or a personal or close family history of seizure disorder or epilepsy. [Established] Alcohol and benzodiazepine withdrawal can cause life-threatening seizures. This is medical information, not a moral judgment. A past withdrawal seizure is a clinical finding that matters regardless of any questionnaire score.
- **Any medication-reaction flag**, or three or more regular medications. Discuss with your prescriber or pharmacist before adding anything new, including supplements.
- A high score on any section does not tell you your genetics. Only a validated test ordered by a clinician can do that, and even then it is one piece of information.

5.4 Provisional profiles (for facilitators)

[Kernel hypothesis] These patterns are the Kernel's working hypotheses, not diagnoses or genetic results.

Profile	Pattern	How it may feel
Depleted Worrier	"Supply" high + Worrier	Chronic anxiety with low baseline mood; depressants felt like the first real calm
Understimulated Warrior	"Supply" high + Warrior	Flatness and boredom; stimulants made life feel real
Anxious Depressant Pattern	Worrier + weak brakes	Fast progression to alcohol or benzodiazepine dependence; the body cannot self-quiet

Profile	Pattern	How it may feel
Impulsive Stimulant Pattern	Warrior + weak brakes	Cannot interrupt a craving once it fires; stimulant use escalated quickly
Depleted-Impulsive	"Supply" high + weak brakes	Multi-substance patterns
Metabolic Mismatch 5.5 The Kernel Code	Medication flags + any above Medications fail in unusual	ways; may have been mislabeled "drug-seeking"

After the form, a facilitator may give a short code for your provisional profile. **Your code is "estimated"** until a clinician-ordered DNA or pharmacogenomic test is done; then it can be marked "confirmed". The code is only a shorthand. It is not a medical record. If you show it to a provider, show your actual medications, test results, and history at the same time. An estimate from a questionnaire is not a test result and should always be labeled as an estimate.

5.6 The brain-type card and four-line introduction

Groups use a one-page card, "What kind of brain do you have?" Read both descriptions; check the one that fits, or the combination. "I don't know my type yet" is a fine answer.

Each person can introduce themselves in four lines:

1. My name is [first name].
2. I am [brain type].
3. My "Thrills of Choice" (what you currently do or use for a thrill) include [things].
4. Right now I'm working on [one thing].

The group responds to each type:

Type	Group response
Warrior	Channel it.
Worrier	We've got you.
Warrior-Worrier	You've got range.
Depleted ("supply" type)	We're rebuilding with you.
Depleted Worrier	We go slow and we go together.
Understimulated Warrior	We'll find you a real mountain.
I don't know my type yet	You will. We'll figure it out together.

KEY POINTS

Key points: Intake and your personal card

- The intake form is a self-reflection tool, not a test.
- Answer as your baseline self, not in withdrawal or after use.
- Withdrawal seizures or medication flags: tell a clinician the same day.
- Your Kernel Code is an estimate until confirmed by a clinician-ordered test.
- Brain types are a working model **[Kernel hypothesis]**.

Chapter 6. Progress wallet

In this chapter. A 12-month way to track how you are doing on several measures instead of one number, plus two small cards to carry: a safety card for new prescribers and a medication list.

6.1 Why track

A single data point tells you where you are. A week of data points tells you which way you are heading. The direction matters more than any single day. Tracking is not about perfection. It is about seeing the signal, even when it moves slowly.

6.2 How to score

Rate each measure from 1 to 10 once a week, answering as your ordinary self.

Measure	1	5	10
Mood	Rock bottom	Manageable	Solid, stable
Energy	Can’t get up	Getting through it	Full and ready
Sleep quality	Terrible, no rest	Some rest	Deep, restorative
Anxiety (lower is better)	Overwhelming	Present but manageable	Rarely present
Craving (lower is better)	Constant, consuming Noticeable		Minimal or absent
Brain clarity	Total fog	Some function	Sharp, clear

Log the six numbers plus a note each week, for 48 weeks. Early weeks may show little change or even a temporary dip. That is common and not a reason to quit.

6.3 The monthly page

Each month, record:

- Whether you took each supplement or medication you and your prescriber agreed on (adherence)
- Exercise sessions completed
- Average hours of sleep
- Illness or major stress
- Your biggest win

At the end of the year: what changed most; which supplements you still take and why; what you want year two to look like.

6.4 The 12-month arc (Kernel plan)

[Kernel hypothesis] This is the Kernel's framework, not a trial-tested plan.

Months	Kernel label	Focus
1-3 Months	Biological foundation Kernel label	Sleep, food, hydration, movement, and any prescriber-agreed supports Focus
4-6	"Taper + neurochemical support"	**Any reduction of a substance or medication is directed by a prescriber.** Never stop alcohol, benzodiazepines, Z- drugs, GHB, or high-dose gabapentinoids suddenly. A break is not a reset: tolerance falls, so returning to old amounts is dangerous.
7-12	Environmental redesign	Rebuild routines, people, and places to fit what works for you

Evidence-based treatments (for example, medicines for opioid or alcohol use disorder, and counseling) do not wait for month 4. If you are starting or are on one, keep taking it unless your prescriber says otherwise.

6.5 Optional lab tracking

Some people track homocysteine and vitamin B12 with their clinician. The Kernel suggests targets of homocysteine under 10 umol/L and B12 over 400 pg/mL. [Kernel hypothesis] Reference ranges differ

between labs, and your clinician decides what to order and how to read it. Lab values do not diagnose addiction.

6.6 The cut-out cards

Safety card. Carry it and show it to any new prescriber, pharmacist, or emergency provider. It should hold:

- Your estimated or confirmed Kernel Code, and which it is
- Only test results you have actually had (for example, a CYP2D6 result from a clinical lab) and write "estimated" for anything inferred from a questionnaire
- "Avoid" items agreed with your clinician (for example, codeine or tramadol if a CYP2D6 result calls for it)
- An emergency contact; 988 and 911

The Kernel suggests "folic acid" as an example avoid item for people with a particular MTHFR result. **[Kernel hypothesis]** Do not put it on your card, or stop folic acid or prenatal vitamins, unless your clinician agrees. Folic acid is standard care in many situations, including pregnancy planning.

Medication card. List every prescription, over-the-counter drug, and supplement, with the amount and schedule exactly as your prescriber and pharmacist have it. Update it after every change. This is the card that prevents a dangerous interaction, so keep it current.

> KEY POINTS
>
> Key points: Progress wallet

- Track six measures weekly; watch direction, not single days.
- The Kernel's 12-month arc is a framework, not a trial result.
- Any taper is prescriber-directed. Never stop alcohol, benzodiazepines, or GHB suddenly.
- The safety card is only as good as what is verified. Label estimates.
- Keep the medication card current.

Chapter 7. If you are incarcerated

> **In this chapter.** A guide for anyone in jail, prison, detention, or another institution, and for the people who bring them materials. It covers what is realistic inside, how to stay safe, how to use the time, and how to prepare for release, when overdose risk is highest.

Crisis: **988** (if you have phone access) or tell facility staff or medical. In a medical emergency, ask for help immediately. This guide is not medical advice. Not everything here will be allowed where you are; do what is permitted.

7.1 What confinement does, and what you can do

[Emerging] Chronic threat, poor sleep, isolation, and lack of choice raise stress and can worsen mood and impulse control. **[Kernel hypothesis]** The Kernel links these to specific brain systems. The practical steps below do not depend on that model.

Problem	What helps
Constant stress, poor sleep	A fixed daily routine; daily breathing practice; regular movement; time near calm people
Flat, understimulating days	Learning something new, a goal you chose, teaching others
Loneliness, even in a crowd	Deliberate contact: a study partner, a group, a letter
Poor food	Eat protein at each meal, drink water, use commissary thoughtfully (below)
7.2 Staying lucid	
Not a moral argument, a practical one.	
Using inside	Staying clear
Can mean new charges, more time, a worse record	Your time runs; nothing is added
Supply is unregulated and unknown. Fentanyl and other dangerous adulterants (such as nitazenes, xylazine, and Using inside	Your health is the asset you need on release Staying clear
medetomidine) reach facilities too.	
Dependence formed inside becomes the first crisis at release	Habits built inside travel with you
Debts and risk in the inside economy	A reputation for building, studying, and helping

If you are dependent on alcohol, benzodiazepines, or opioids inside:

- Alcohol or benzodiazepine withdrawal can cause fatal seizures. Go to medical immediately. Never stop either suddenly on your own.
- Ask medical for an evaluation and tell them everything you have used. If you were on buprenorphine or methadone before, ask whether it can be continued; stopping it abruptly raises overdose risk.

- Ask medical whether vitamins or other supplements are allowed. Do not start anything not approved by them.
- Use any peer group available (AA, NA, SMART, or informal). Peer support is real support whatever the framework.

7.3 Feed your brain

- **Protein at every meal.** Eggs, beans, meat: eat them regardless of taste.
- **Water.** Dehydration mimics anxiety, fog, and low mood. If you feel foggy and have not had water, drink first.
- **Commissary.** Useful items are those that give protein, fruit or vegetables, and a source of calm such as tea. Tea contains caffeine, which can worsen anxiety and sleep; use decaf or herbal tea if you are anxious or sleeping badly.
- **Supplements.** Vitamin D, magnesium, omega-3, and a B-complex are often discussed. [Emerging] Evidence for mood and sleep benefits is limited and varies by person. Ask medical before taking any, since they can interact with medicines and with kidney or heart conditions. Amounts are for your clinician or pharmacist to set.
- **Folic acid.** The Kernel suggests avoiding synthetic folic acid in people with a particular MTHFR result. [Kernel hypothesis] Do not skip meals or fortified food over this, and do not change prenatal or prescribed folate without a clinician.

7.4 Move: no equipment needed

[Established] Regular exercise improves mood, sleep, and stress. [Kernel hypothesis] The Kernel's claims about specific brain chemistry (dopamine, BDNF) are not trial-proven for people in confinement. Start gently if you are out of shape or unwell, and ask medical if you have a heart or joint condition.

A simple week in a small cell or on the yard:

Days	Focus	Examples
Mon / Thu	Upper body	Push-ups and variations, dips between bunk and floor
Tue / Fri	Legs and core	Squats, lunges, calf raises, glute bridges, planks
Wed / Sat	Steady cardio, 30-45 min	March in place, shadow-boxing, step-ups. You can talk but you are working.
Sunday	Mobility and breathing	Stretching, slow breathing, body scan

Days	Focus	Examples
Every morning	5-minute start	A few jumping jacks, push-ups, squats, deep breaths

On the yard: walk or jog; pull-ups or dips if bars exist; short sprint intervals if you are fit and healthy. Chess and similar games train patience and planning, and they are social.

7.5 Socialize: building a group inside

You do not need approval to talk to two or three people. Any rules of the facility come first. Do not run anything that breaks them.

1. Find two other people. Look for the quiet ones who are clearly thinking.
2. Pick a regular time and place. Consistency is the structure.
3. Start with the four-line introduction (Chapter 5).
4. Read one passage together. You can hand-copy key pages.
5. Teach what you learn. It cements it and builds trust.
6. Bring one short activity (a one-word check-in, a question from a book).
7. Let it grow slowly; do not recruit hard.

Safety inside:

- Do not do deep emotional work (role-play, trauma stories) until there is trust (at least six consistent sessions). Trust inside is slower and more fragile.
- Do not confront disruptors. If someone is there to undermine the group, end the session early.
- Know where to go if a session sets off a crisis: facility medical, a counselor, **988** if available.
- You are a facilitator, not a therapist. You hold the structure; you do not fix people.
- Do not write down or record anything that could be used against participants. State the confidentiality norm every time, and be honest that you cannot guarantee it in an institution.

7.6 Be yourself, and build

An institution assigns you a number. You can still choose how you describe yourself. A daily introduction (name, what kind of brain you think you have, what you are working on today) is a practice, not magic. It helps if it feels true; say it even when it feels false.

Education. Time is the one thing you have. Ask your education department about options. In rough order:

Step	What it opens
GED or HiSET	The floor for work and college; usually free
Associate or bachelor's degree	Federal Pell Grants for incarcerated students were restored in 2023; ask your case manager whether your facility has a program
Trade certificates (HVAC, electrical, welding, forklift, food handler, OSHA)	Work soon after release
IT and online certificates (CompTIA, Google Career Certificates, coding books)	Remote and entry-level technology work, where available

A sample day: 5-minute start; a 1.5-2 hour study block; teaching or peer time; 30-45 min of movement; an hour of evening study or writing; reading before sleep. Any subject you choose (geology, mathematics, history, biology, law, writing) trains focus and gives you something of your own.

Writing. One handwritten page a day adds up to a year's worth of pages. **[Emerging]** Writing about hard experiences helps some people and is stirring for others. If it brings up overwhelming flashbacks or thoughts of self-harm, stop, ground yourself (feet on the floor, name five things you can see), and tell medical or a counselor. Letters you never send are allowed.

7.7 A four-question self-check

[Kernel hypothesis] Answer as your ordinary self, not in withdrawal or after use. Treat answers as questions to bring to a clinician, not as test results.

1. First time you used your main substance, how did it feel? (finally calm; finally focused; finally normal; high or euphoric)
2. Under stress, do you flood with anxiety that takes days to clear, or go flat and need something to happen?
3. Once a craving starts, can you stop it?
4. Did antidepressants or pain medicines work the way they should? If not, tell a prescriber: unusual responses may be tied to how your body processes medicines.

7.8 Release: the highest-risk time

- **Tolerance has dropped.** Taking the old amount after release is a leading cause of fatal overdose. Ask before release about naloxone, a bridge supply of any medicine, and a first appointment.
- **If you are on buprenorphine or methadone,** ask before release how to continue it. Do not stop on your own.

- **Plan the first week:** where you sleep, who picks you up, which clinic, which meeting, which person you call. Write it down.
- **Bring a short medication and health summary** and a copy of your safety card (Chapter 6).

A projection, not a result. The Kernel states that nationally about 65-70% of people are rearrested within three years (a US Bureau of Justice Statistics figure), and **projects** that someone who follows its full plan might see 35-45%. This is a **[Kernel hypothesis]** projection, not trial evidence. There is no published study behind it. Treatment, housing, work, and relationships are what reduce risk.

> KEY POINTS
>
> Key points: If you are incarcerated

- If you are withdrawing from alcohol or benzodiazepines, go to medical now.
- Do not use unknown substances; fentanyl and other dangerous drugs reach facilities.
- Routine, movement, food, water, learning, and contact with others are your tools.
- Before release: naloxone, a medication plan, and a first appointment.
- The recidivism figure from the Kernel is a projection, not a trial result.

Chapter 8. Hangovers and impaired-activity safety

> **In this chapter.** Two linked ideas. First, the morning after is a rare moment of clarity about the cost of use; capture it. Second, impairment and activity: how substances change driving, tools, water, and risky activities, and how to plan so one night does not become a lifelong consequence.

Emergency box. Seizure, chest pain, confusion that will not clear, a racing heart that will not settle, or any possible acetaminophen overdose: call **911** or **Poison Control 1- 800-222-1222** (before symptoms appear; supplements are not treatment). Thoughts of suicide: **988**. This chapter is harm reduction, not permission to use.

8.1 The hangover as a decision point

While a substance is active, the signals that argue against using are muted. In the hangover that override is briefly gone, and you feel the real cost. That is why many people decide to change at this moment, and why the resolve often fades as the body settles. The fading does not prove the realization wrong.

Capture it (that day):

1. Write down specifics, not “I need to stop”: what you missed, what you risked, what it cost, in the words that came.
2. Do a lapse review (Chapter 1, section 1.6) the same day.
3. Tell someone. A private resolution is easy to let slip.

Two traps.

- Do not make the hangover the only trigger. Waiting for the next bad morning turns a signal into the whole plan.
- Do not use it for self-condemnation or big life decisions. Judgment and mood are still recovering. Write it down, tell someone, and decide on a steadier day.

8.2 What the morning after tends to feel like

Descriptions of what tends to happen, not what will happen to you. Severity varies with amount, frequency, and your own health.

Substance group	Common experience	Danger flags
Alcohol	Headache, dehydration, nausea, fatigue, “hangxiety”. Usually peaks within hours and clears within a day.	Tremor, sweating, confusion, or seizure after heavy regular use: this is withdrawal. **911.**
Benzodiazepines	Rebound anxiety, tremor, racing heart	Withdrawal territory, not a mild morning-after. Never stop suddenly.
GHB	Heavy grogginess, disorientation, low mood	Redosing to “feel normal” is dangerous. Withdrawal can start within hours and needs medical supervision beyond occasional use.
Opioids (including fentanyl, kratom, 7-OH)	Aches, stomach upset, restlessness, flat mood; builds over the first day	Unverified supply makes the day after riskier. **Tolerance falls quickly.** Keep naloxone.
Meth, cocaine, crack, cathinones	Deep fatigue, low mood, anxiety; crack and cathinone comedowns are fastest	**Redosing during a comedown is the highest- risk moment.**
MDMA	Fatigue, jaw soreness, low mood for days (often peaks 2-3 days after)	Heat illness and low sodium are risks during use.
Ketamine, DXM, PCP, LSD, psilocybin	Fog, odd perception, fatigue	Confusion or paranoia lasting past about 48 hours: get psychiatric care.
Cannabis, synthetic Substance group	Mild grogginess; synthetics Common experience	Synthetic cannabinoids are a Danger flags

Substance group	Common experience	Danger flags
cannabinoids	can cause real illness and lasting anxiety or paranoia	separate, more dangerous category.
Nicotine, caffeine, khat	Waves of craving; caffeine headache and tiredness; mild stimulant-type low	Mostly uncomfortable, rarely dangerous
Inhalants, poppers, chemsex	Headache, grogginess; sleep deprivation after long sessions	Sudden death from sniffing solvents, aerosols, or computer duster can happen any time. Poppers interact with erectile dysfunction medicines.
Gambling, shopping, gaming, No chemical; shame, regret, compulsive sexual behavior	financial reckoning, sleep loss	Gambling crises can bring suicidal thoughts: **988**.

8.3 Supporting your body (with your clinician)

Metabolizing a substance is real work, but no supplement replaces medical care. Amounts and timing are for your clinician and pharmacist; check anything new for interactions (a pharmacist or an interaction checker).

- **Thiamine (vitamin B1).** [Established] Heavy long-term alcohol use commonly causes thiamine deficiency, which can progress to Wernicke's encephalopathy, a medical emergency, and to lasting memory damage. Clinicians give thiamine alongside or before glucose in alcohol withdrawal. Anyone with a history of heavy sustained alcohol use should raise this with a clinician.
- **N-acetylcysteine (NAC).** [Established] It is a hospital treatment for acetaminophen overdose. **If you may have taken too much acetaminophen, call Poison Control or go to the ED first, before symptoms.** [Emerging] NAC for cravings has promising but inconsistent results.
- **Magnesium, L-theanine, omega-3, B vitamins including methylfolate and B12.** [Emerging] Commonly used, limited evidence in recovery. Check with a pharmacist for interactions.
- **Tyrosine (a dopamine precursor).** [Emerging] Do not take it during or right around stimulant use, with MAO inhibitors or levodopa, or while any psychotic symptoms are active. Wait for psychiatric clearance.
- **5-HTP.** Only on a physician's advice, never with any serotonergic drug (serotonin syndrome risk), and never during or right after use of serotonergic substances such as MDMA.

Timing rule. Begin dopamine, serotonin, or methylation supports after acute use has cleared, not during or right around use. [Kernel hypothesis] This is a cautious general principle, not a documented interaction for every item. **Smoking cessation and medicines.** [Established] Stopping smoking can raise blood levels of

clozapine, olanzapine, and theophylline (smoke speeds their clearance), and caffeine hits harder after quitting. Tell your prescriber before your quit date.

8.4 Respect the environment: impaired activities

This part is for people who are going to use anyway. Its job is to reduce damage.

The core problem. Most impairing substances also impair your ability to judge how impaired you are. You feel better than you are. Feeling fine is not evidence of being fine.

Rule 1: decide about the car before the first dose, not from inside it.

- [Established] 0.08 BAC is the enforcement limit, not the safety limit. Reaction time and divided attention are impaired at much lower levels, and most people feel least impaired when they are most impaired.
- The body clears roughly one standard drink an hour for most adults, but this varies a lot (weight, sex, food, liver, genetics). Treat any count as a floor, not a guarantee. If unsure, wait longer or take a rideshare.
- Drive after mixing substances? Treat the total as worse than the sum. Alcohol with cannabis is more impairing than either alone.
- Edibles are a trap: onset can take an hour or more, peak is hours later, and the whole dose is already in your system. If you ate an edible today, you are not driving today.
- No dose of ketamine is compatible with driving. GHB plus any alcohol can tip into sleep within minutes. Opioid-impaired driving is underestimated. Stimulants can make you feel sharper while judgment gets worse.

Time floors before driving or machinery (approximate; not a clearance):

Substance	Minimum before driving	Caveat
Alcohol, 1 standard drink	2-3 hours	Weight, food, and speed of drinking change this
Alcohol, 3 standard drinks	5-6 hours; morning is safer	Machinery: longer
Cannabis, smoked or vaped	3-4 hours or more	Higher potency and concentrates need longer; regular users still test as impaired on objective tests
Cannabis, edibles	Not the same day	Onset is delayed and unpredictable
MDMA	12 hours	The morning after may still be impaired
Ketamine	6 hours or more	Feeling “back” may come before full recovery

Substance	Minimum before driving	Caveat
GHB Substance	4 hours; a full night if alcohol Unpredictable depth of Minimum before driving was also used	Caveat sedation
Cocaine	3 hours or more	Rebound anxiety and fatigue follow

Zero-dose environments. No alcohol or other impairing substance when operating any vehicle (car, motorcycle, boat, ATV), power tools, chainsaws, mowers and trimmers, equipment with blades, or ladders above about six feet. There are no "I've done it a thousand times" exceptions.

Water. Do not swim, kayak, paddleboard, or boat while impaired. [Established] Alcohol is involved in a large share of adult drowning deaths.

Long-distance and shift drivers. Stimulants can postpone sleep but not remove the need for it, and when they wear off sleep can arrive suddenly, in minutes. The only safe answer is to stop and sleep. Pressure from employers to skip rest is a workplace safety problem, not the driver's alone.

Risky activities. Alcohol quiets fear and also slows risk judgment. Stimulants reduce fear of loss. MDMA can mask fatigue and overheating. Cannabis can distort depth and time, and panic on rides or heights is common. Pick lower-risk activities while impaired, and have a sober companion.

Frightening events while impaired. [Established] Alcohol blackouts impair memory formation, which can make later trauma recovery harder because there is no clear narrative to work with. [Kernel hypothesis] The Kernel extends this to cannabis, MDMA, and stimulants (that frightening events under them may be stored in harder-to-process ways). Evidence for those specific claims is limited. The practical point stands: a panic or trauma experience while impaired can leave lasting anxiety. Seek trauma-informed care if it does.

Before-you-use checklist:

1. Vehicle: is the car parked for the night? Is a rideshare or designated driver confirmed? Does someone know the car is staying?
2. Machinery and tools: secured and off. Nothing "needs doing."
3. Plans for tonight and tomorrow morning: have you allowed for time to clear?
4. Route: is the peak going to arrive after the dose (edibles, oral)? Then plan for the peak.
5. Companions: does someone know what is being used and could step in?
6. Naloxone within reach if opioids are possible. Do not use alone.

> KEY POINTS
>
> Key points: Hangovers and impaired-activity safety

- The morning after is a clear look at the real cost; write it down and tell someone.
- Do not make big decisions in the hangover; do not stay silent about it either.
- Withdrawal, psychosis, or suspected acetaminophen overdose are emergencies, not hangovers.
- Impairment hides itself; decide about driving before the first dose.
- Edibles, GHB with alcohol, and mixing substances are the classic traps.
- Supplements support recovery; they do not treat withdrawal or overdose.

Chapter 9. Alcohol-free drinks (the Bartender's Friend)

In this chapter. Twenty-five alcohol-free drinks made from ordinary bar ingredients, so someone not drinking can order something good without explaining. The Kernel pairs each with a brain-type target. Read the safety flags first: some drinks contain caffeine, trace alcohol, or ingredients that interact with medicines.

9.1 Read this first

- [Kernel hypothesis] The "neurochemical targets" are the Kernel's framework. Juices, teas, and syrups do not treat a gene variant, anxiety, or addiction, and nothing here replaces medication or care. What the drinks reliably give you is fluid, a little food, and a drink that looks like everyone else's.
- **Caffeine caution.** Several recipes use coffee, espresso, cold brew, green tea, or cola. [Established] Caffeine can worsen anxiety, panic, palpitations, and sleep, and interacts with some medicines. The Kernel's own guidance recommends less caffeine for anxious "Worrier" profiles and during early rebuilding, and some recipes conflict with that. Use the caffeine-free swap in the table if you are anxious, sleeping poorly, in early recovery from a stimulant, pregnant, or have a heart condition. Several drinks aimed at "Warriors" are for people who are stable and have chosen caffeine on purpose.
- **Bitters contain alcohol.** Nearly every recipe calls for dashes of bitters. Standard bitters are high-proof (roughly 40% alcohol or higher). A dash is tiny, but if any alcohol is a problem for you, or you take disulfiram, metronidazole, or other alcohol-sensitive medicines, **ask for the drink without bitters** (or use a non-alcoholic bitters product).
- **Check the ginger beer.** "Live culture" ginger beers are fermented and can contain trace alcohol. Choose a non-fermented or clearly alcohol-free brand.
- **Grapefruit** blocks a liver enzyme (CYP3A4) that handles many medicines. If the guest takes regular medication, leave it out. [Established]
- **Other flags:** tonic water contains quinine (can interact with some heart-rhythm and other medicines); salt in savory drinks matters for blood pressure; honey and juices add sugar (diabetes); cranberry,

pomegranate, and ginger can interact with some blood thinners. When in doubt, ask the guest's pharmacist.

- **If bars are a trigger for you,** plan your exit and who you will text. A good drink does not remove the risk of being in a bar.

9.2 Bartender's note

Serve every drink as you would any other order. No commentary, no health explanation. People ordering these may be early in recovery, managing anxiety, taking a medication, or just not drinking tonight. They owe no one an explanation. Ask about medications only to avoid a clash (grapefruit, caffeine, bitters), and do it quietly.

9.3 The 25 drinks

Flags: **C** = contains caffeine (coffee, tea, or cola). **B** = bitters (trace alcohol; leave out on request). **G** = grapefruit. **Q** = quinine (tonic). Targets are **[Kernel hypothesis]**.

#	Drink	Main ingredients Kernel target	Flags and swaps
1	The Warrior	Tart cherry juice, "Warrior"	C (low), B. Use

cold green tea, lime, honey syrup, bitters, soda	**profile: steady energy**	**decaf or herbal tea.**

2	**The Sparky**	**Orange and lemon juice, orange bitters, diet cola, olives, pinch of salt**	**"Warrior": novelty**	**C (cola), B. Use caffeine-free cola or sparkling water.**
3	Shock Rock	Concord grape juice, lemon, bitters, ginger beer, salt, cocktail onions	"Warrior"/ reward deficiency	B. Salt: check with blood pressure.
4	Mission Fuel	Cold espresso, pineapple, lime, syrup, tonic, orange bitters	"Warrior": pre-task fuel	**C (high)**, B, Q. Skip espresso if anxious; use sparkling water.
5	The Architect	Cold green tea, lemon, honey, bitters, soda, cucumber	"Worrier": calm focus	C (low), B. Decaf green tea.

2	The Sparky	Orange and lemon juice, orange bitters, diet cola, olives, pinch of salt	“Warrior”: novelty	C (cola), B. Use caffeine-free cola or sparkling water.
6	The Sage	Apple juice, lime, mint, agave, celery bitters, ginger ale	“Worrier”: calm	B. No caffeine.
7	The Still	Tart cherry juice, “Worrier”: chamomile tea, honey, bitters, soda	evening calm	B. Chamomile: caution with ragweed allergy and blood thinners.
8 #	The Folate Drink	Pomegranate Main ingredients Kernel target and orange juice, lemon, honey syrup, orange bitters, soda	“Supply” (MTHFR) type	B. Juice is not a Flags and swaps folate treatment.
9	The Methyl	Tomato and pineapple juice, lemon, celery bitters, salt, pepper, soda	“Supply” type	B. High sodium.
10	The B Complex	Pineapple, orange, **grapefruit**, honey syrup, bitters, ginger beer	“Supply” type	**G**, B. Replace grapefruit with more orange or pineapple.
11	The Algorithm	Chocolate syrup, cold espresso, coconut cream, vanilla, salt	Low reward	**C (high)**, sugar. Use decaf espresso or skip.
12	The Dopamine	Cold brew, cherry juice, vanilla, oat or coconut milk, bitters	Low reward	**C (high)**, B. Decaf cold brew.
13	Norm	Coffee, coconut cream, mint, syrup, splash of cola, coconut flakes	Flat, bored state	**C (coffee + cola)**. Make it with decaf or herbal tea.
14	The Serotonin	Pineapple, coconut cream, lime, honey, bitters, soda	Mood	B. Sugar. A tropical drink does not replace an antidepressant.

2	The Sparky	Orange and lemon juice, orange bitters, diet cola, olives, pinch of salt	“Warrior”: novelty	C (cola), B. Use caffeine-free cola or sparkling water.
15	The Ground	Chamomile tea, apple juice, lemon, honey, bitters, salt	Panic, high stress	B. If panic is frequent, see a clinician.
16 #	The Metabolizer Cucumber, Drink	Main ingredients Kernel target lemon, ginger, celery bitters, tonic, basil	“Sensitive metabolizer”	B, Q. Ginger: Flags and swaps caution with blood thinners.
17	The Burner	Cold brew concentrate, pineapple, lime, agave, orange bitters, soda	“Fast metabolizer”	**C (high)**, B. Skip if anxious; use sparkling water.
18	The Garden	Ginger beer, pineapple, lime, honey, mint, soda	Gut and mood	Check ginger beer for trace alcohol.
19	The Patch	Ginger, lemon, apple juice, honey, bitters, soda	Gut	B. Ginger: caution with blood thinners.
20	The Restoration	Tart cherry, chamomile, honey, bitters; can be served warm	Sleep	B. **[Emerging]** Small trials suggest tart cherry may help sleep a little.
21	The Downshift	Chamomile or lavender tea, coconut water, lemon, honey, rosemary, soda	Comedown	No caffeine, no bitters. Coconut water is high in potassium: caution with kidney disease or certain heart medicines.
22	The Civilian	Cranberry, orange, lime, syrup, soda, orange bitters	Social cover	B. Cranberry: caution with warfarin.
23	Alexa	Butterfly pea tea or blueberry juice, lemon, honey syrup, bitters, tonic	Social ease	B, Q.

2	The Sparky	Orange and lemon juice, orange bitters, diet cola, olives, pinch of salt	"Warrior": novelty	C (cola), B. Use caffeine-free cola or sparkling water.
24 #	Siri Drink	Watermelon (or pomegranate), Main ingredients Kernel target lime, honey, bitters, **splash of grapefruit**	Social re-entry	**G**, B. Leave out the grapefruit. Flags and swaps
25	The Protocol	Pomegranate juice, cold green tea, lemon, honey, bitters, splash of ginger beer, soda	"All-round"	C (low), B. Use decaf tea. Check ginger beer.

Best caffeine-free, bitters-free choices: The Downshift (21) is already both. Drinks 6, 7, 15, 20, 22, and 23 are caffeine-free and become bitters-free if you leave out the bitters.

9.4 What the claims can support

- Hydration, a little food, and a drink that feels social are **[Established]** helpful basics.
- A cup of tea, chamomile, or tart cherry may help some people relax or sleep. **[Emerging]** Effects are small and vary.
- Claims about specific brain chemicals (that a juice raises dopamine, builds serotonin, repairs the gut, or "targets" a gene variant) are **[Kernel hypothesis]**. Treat them as flavor and ritual, not as treatment. In particular, coffee and fruit juice are not meaningful tyrosine or tryptophan supplements.

> KEY POINTS
>
> Key points: Alcohol-free drinks

- Several drinks contain caffeine; swap them if you are anxious, sleeping badly, or pregnant.
- Bitters contain alcohol; ask for none if any alcohol is a problem or you take alcohol- sensitive medicines.
- Skip grapefruit if you take regular medicines.
- The brain-chemistry claims are a hypothesis. Enjoy the drink; keep your care plan.
- A pleasant drink does not make a bar a safe place for someone who is struggling.

APPENDIX A. GLOSSARY

> **In this chapter** - About 120 terms, defined in plain language, with duplicates merged. - No doses. Labels: **[Kernel]** means a Kernel framework term; **[Hypothesis]** means not trial-tested. - Where a term has a safety point, it is included.

A

- **Acetaminophen (paracetamol):** A common pain reliever, also found in many cold and cough products. A large amount can damage the liver with no symptoms for 24 to 72 hours. Call Poison Control (1-800-222-1222) before symptoms.
- **Actor versus Character:** **[Kernel]** The addicted identity is a role, not the whole person.
- **Adenosine:** A brain chemical that builds up during waking and creates sleepiness. Caffeine blocks it, so it mutes tiredness rather than removing it.
- **Allostasis / allostatic load:** The body's stress systems settling at a harder-to-calm baseline after long substance use. One explanation for the on-edge feeling in early recovery.
- **Anandamide:** A natural cannabinoid the body makes. It contributes to calm and to the "runner's high."
- **Anhedonia:** Temporary inability to feel pleasure from ordinary life. Common after stopping and often improves as the brain recovers.
- **Apropos therapy:** **[Kernel]** Using a fictional addiction story as a mirror for recognition rather than a trigger.
- **Archetype:** **[Kernel]** A composite character used in the Kernel's case studies. It is not a real patient.

B

- **BDNF (brain-derived neurotrophic factor):** A protein that helps brain cells grow, repair and form connections. Exercise raises it.
- **Benzodiazepines ("benzos"):** Sedatives such as alprazolam, diazepam, lorazepam and clonazepam. Never stop suddenly after regular use. See the 12 Safety Rules.
- **Brixadi:** A weekly or monthly buprenorphine injection for opioid use disorder. An older 6-month implant was discontinued.

- **Buprenorphine:** A medication for opioid use disorder. It is not substantially dependent on the CYP2D6 enzyme. A prescriber decides on use.

C

- **Character autopsy:** [Kernel] A structured review of the old addicted self.
- **Chevronism:** [Kernel, Hypothesis] The pull toward the next method or intensity as a rank or achievement.
- **Clarity:** [Kernel] First of the Trinity. Understanding what happened to you as a mechanism, not a moral story.
- **Collective tab:** [Kernel] The cost others absorbed during active addiction.
- **Comedown:** The period as a substance clears. It is metabolism and recalibration, not malfunction.
- **Commandeering:** [Kernel] When a normal, partial or delayed signal is read as failure and answered with more of the substance or behavior.
- **Contingency management:** Giving rewards for verified abstinence. Strong evidence, especially for stimulants.
- **Cortisol:** The main stress hormone. Chronically high levels worsen anxiety, sleep and craving.
- **Counterfeit pill:** A pill made to look like a prescription drug but made illegally. It can contain fentanyl, nitazenes or other drugs.
- **Counterfeit sacred:** [Kernel] A chemical shortcut that mimics a spiritual or emotional breakthrough without the groundwork to sustain it.
- **Craving:** An urgent pull toward a substance or behavior. It usually crests and falls.
- **Cross-taper:** Switching to a different, usually longer-acting drug before reducing. Whether to use it is a prescriber's choice.
- **Cue reactivity:** Craving set off by reminders of use (people, places, smells). It can persist for years.
- **CYP enzymes (CYP2D6, CYP3A4, CYP2B6, CYP2C19, CYP1A2, CYP2A6, CYP2C9):** Liver enzymes that break down many drugs. Fast or slow versions change how long a drug lasts or whether it works. A prescriber and pharmacist can use your results.

D

- **D2 receptor:** A type of dopamine receptor involved in motivation and reward. Blocking drugs can reduce psychosis but can also flatten drive.
- **Dial, not a switch:** [Kernel] Capacity to resist an urge rises gradually. It is not simply present or absent.
- **Disobedience:** [Kernel] Standing inside a trigger and consciously declining it, on purpose, with support.

- **Dopamine:** Chemical for drive, pursuit, focus and the sense that effort is worth making.
- **Dormant vulnerability:** The idea that a biological risk can remain after years without use, waiting for a new exposure.
- **DXM (dextromethorphan):** A cough-suppressant ingredient that is misused for dissociative effects. Some cold products also contain acetaminophen. Some prescription products contain it too.

E

- **Endorphins:** The body's own opioid-like chemicals. They reduce pain and create relief.
- **Environmental contamination:** [Kernel] Triggers in your home: paraphernalia, smells, residue.
- **Evidence labels:** Tags used in the Handbook: Established, Emerging, Kernel hypothesis.

F

- **Fentanyl:** A very strong synthetic opioid, often found in counterfeit pills and powders. Naloxone reverses it.
- **Fentanyl test strips:** A partial test that detects fentanyl. It misses other drugs, including nitazenes. A negative result never makes a product safe.
- **Friction:** Anything that makes access harder (blocking an app, handing someone your card). It beats willpower in the moment.

G

- **GABA:** The brain's main calming chemical, the brake pedal. Low GABA feels like tension.
- **Gabapentinoids (gabapentin, pregabalin):** Medicines for nerve pain and seizures. High doses can cause dependence and a dangerous withdrawal. Bridges are a prescriber's decision.
- **GABRA2 / GABRB3:** Genes for parts of the GABA receptor. The Kernel links variants to a thinner brake system [Hypothesis; evidence mixed].
- **GBL / 1,4-BD:** Substances the body converts to GHB.
- **GHB:** A sedative with a very steep dose-response and no antidote. Withdrawal can be dangerous. Never stop suddenly after regular use.
- **Good Samaritan law:** A state law that protects people who call for help in an overdose. It varies by state.
- **Grounding:** Simple techniques that bring attention to the body and present (cool water, breathing, naming what you see).

- **Gut-brain axis:** A two-way link between gut and brain that influences mood, stress and craving.

H

- **Harm reduction:** Practical steps that lower risk without requiring abstinence, such as naloxone, drug checking and never using alone.
- **HPA axis:** The stress-response system linking brain, pituitary and adrenal glands.
- **HPPD (hallucinogen persisting perception disorder):** Visual or perceptual effects that persist after psychedelic use. Reality testing stays intact. The role of SSRIs is a specialist decision.
- **Hypervigilance:** A heightened sense of threat after stopping some substances: loud sounds, light sleep, easy startle. It is usually time-limited.

I

- **Incentive-sensitization:** A model in which "wanting" becomes stronger while "liking" does not. It explains why a cue can feel urgent.
- **Incubation:** Craving to a cue can grow for weeks or months before declining.
- **Interdose withdrawal:** Symptoms returning before the next scheduled dose, with short- acting drugs. A reason to talk to the prescriber.
- **Interoception:** The brain's sensing of the body's internal state (hunger, thirst, urge).
- **Isolation trap:** [Kernel] Managing a major destabilizer alone and in secret.

K

- **Kernel (the):** The Recovery Kernel, the source body of work this Handbook condenses.
- **K-hole:** A deep dissociative state from ketamine.
- **Kindling:** Repeated withdrawals may sensitize the nervous system and make later ones worse.

L

- **Lapse:** A return to use. It is information and a medical risk. See the 12 Safety Rules.
- **Law of the Prey:** [Kernel, Hypothesis] Four stages of pursuit: perceived opportunity, rising drive, narrowing, then yield or extinguish.

M

- **Manning:** [Kernel] Third of the Trinity. Taking the helm of your own life and helping hold the line for others.
- **Mask change:** [Kernel] Quitting one thing and starting another (alcohol, caffeine, nicotine, gambling, screens).
- **Medetomidine:** A strong veterinary sedative now found in parts of the US street supply. Naloxone does not reverse it. Withdrawal can be severe and needs hospital care.
- **Medication for opioid use disorder (MOUD / MAT):** Buprenorphine, methadone or extended-release naltrexone. A foundation of care, not a compromise.
- **Methylation:** A basic cell process used for detox, DNA repair and making neurotransmitters.
- **Microbiome:** The community of microbes in the gut.
- **Milestone:** [Kernel] A verified, rebuilt capacity (sleep, a relationship, a lab marker, a skill). It is not just elapsed time.
- **Mirror neurons:** Brain cells that simulate what we watch. The Kernel uses this to explain why being around use can raise craving.
- **MTHFR:** An enzyme that activates folate. The Kernel links variants to mood and neurotransmitter supply [Hypothesis].

N

- **NAC (N-acetylcysteine):** A supplement studied for craving. Evidence is promising and uncertain. It is not treatment for an acetaminophen overdose; call Poison Control.
- **Naloxone (Narcan):** Medicine that reverses an opioid overdose. It does not reverse xylazine or medetomidine.
- **Natural architecture:** [Kernel] The real-world sources of reward, calm and connection that replace what the substance provided.
- **Neuroplasticity:** The brain's ability to change with experience.
- **Nitazenes:** A family of synthetic opioids, often several times stronger than fentanyl. They have been found in counterfeit pills. Fentanyl strips do not reliably detect them. Naloxone may need repeated doses.
- **Norepinephrine:** A chemical for alertness and readiness. Too much feels wired.

O

- **Opioid-induced hyperalgesia:** Long-term opioid use that increases pain sensitivity.

- **OPRM1:** The gene for the mu-opioid receptor. The Kernel links the A118G variant to medication response [Hypothesis; evidence limited].
- **Overdose:** A harmful amount of a substance. See “Emergencies: what to do now.”

P

- **PAWS (post-acute withdrawal syndrome):** Waves of low mood, anxiety, poor sleep and craving for months after the worst withdrawal. Expected, not failure.
- **Peptides (BPC-157, Semax, Selank and others):** Short chains of amino acids sold as research compounds. Use only with a physician.
- **Pharmacogenomics:** Using genes to predict how you respond to medicines. A prescriber must apply it.
- **Phenotype / genotype:** Genotype is the code you carry. Phenotype is how it shows up. Do not infer personality or addiction type from a genotype.
- **Poison Control:** 1-800-222-1222, US.
- **Polysubstance use:** Using more than one substance. The most dangerous one comes first in planning.
- **Post-release risk:** The sharply higher chance of overdose after leaving a controlled setting, because tolerance has fallen.
- **Premiums:** [Kernel] The daily basics that keep recovery stable: sleep, food, movement, support, regulation, honest check-ins.
- **Prodrug:** A drug that must be converted in the body to work (for example codeine). Poor metabolizers may get little effect.
- **Prolactin:** A hormone that rises when dopamine falls. High levels can lower sex hormones and sexual function.
- **Psychosis:** Losing track of what is real: voices, delusions. Not cleared in 48 hours after stopping means psychiatric care.

R

- **Recast:** [Kernel] Redirecting the same intensity into something real.
- **Restoration:** [Kernel] Second of the Trinity. Rebuilding the systems the substance changed, with clinical help.
- **Reward system:** Brain circuitry that decides what feels worth repeating.
- **Ritual container:** [Kernel] A structured setting that makes powerful emotional work safe enough to hold.
- **Route escalation:** Moving to a more dangerous way of using (oral to nasal to smoked to injected).

S

- **Sage / Warrior / Worrier:** [Kernel, Hypothesis] Names for two COMT constitutions. Warrior (Val/Val) clears dopamine fast and seeks intensity. Sage (Met/Met) clears slowly and is easily overloaded. “Worrier” is an older name for Sage. Evidence for personality links is mixed.
- **SEEKING system:** Panksepp’s term for the brain’s pursuit-and-curiosity circuit.
- **Serotonergic drugs:** SSRIs, SNRIs, MAOIs, tramadol, triptans, DXM, MDMA and cathinones.
- **Serotonin:** Chemical for mood steadiness, sleep and appetite. Much is made in the gut.
- **Serotonin syndrome:** A dangerous excess of serotonin from mixing serotonergic drugs. An emergency.
- **Set and setting:** Your mindset and your surroundings. Both change how much you use and how it lands.
- **Signal, not sin:** [Kernel] The substance was a signal that something real needed treating, not proof of moral failure.
- **Sobriety circle:** A written definition of the behaviors you are avoiding, used in behavioral recovery.
- **Social spec:** [Kernel] A plan for re-entering social life in stages.
- **Sovereignty:** [Kernel] Handling your own life and costs without billing others.
- **SSRI:** A common antidepressant class that raises serotonin.
- **Standing safeguard:** [Kernel] A low-effort protection kept for life (a check-in, a medication plan).

T

- **Taper:** Reducing a drug gradually. For alcohol, benzodiazepines, Z-drugs, GHB and gabapentinoids, it is medically supervised only.
- **Tare:** [Kernel] The true baseline capacity of a system that must be respected.
- **Tolerance:** Needing more for the same effect. It falls within days during a break.
- **Tolerance reset:** Lowered tolerance after any gap, making the old amount potentially lethal.
- **Trinity:** [Kernel] Clarity, Restoration, Manning.
- **Trusted holder:** [Kernel] A person who holds a card, an account or a supply, so the judge is not the person under the urge.

U

- **Uptime:** [Kernel] A quick check of how stable your recovery is right now.

V

- **Vacation (from a substance):** [Kernel] A break that lets the systems settle back toward baseline.
- **Vagus nerve:** A major body-brain pathway that carries calming signals.

W

- **Wanting versus liking:** Two different brain systems. See “Incentive-sensitization.”
- **Whole-genome sequence (30x, VCF):** A test that reads your genome and returns a variant file. It refines a plan and is never a reason to delay starting. WGBS (bisulfite sequencing) measures methylation and is a different test.
- **Withdrawal:** Symptoms when a substance stops. Some withdrawals can kill (alcohol, benzodiazepines, GHB).

X

- **Xylazine (“tranq”):** A veterinary sedative that is not an opioid, found with fentanyl. Naloxone does not reverse it. It can cause serious skin wounds.

Z

- **Z-drugs (zolpidem and similar):** Sleep medicines. Never stop suddenly after regular use.

APPENDIX B. RESOURCES

These are US resources. Outside the US, replace them with your local emergency number, crisis line, poison control and treatment finder. Check every number before you rely on it. Numbers were taken from the Kernel source documents and not independently re-verified.

> **In this chapter** - One table of US crisis, treatment, harm-reduction and peer-support contacts. - For what to do in an emergency, see “Emergencies: what to do now.”

Crisis and emergency

For	Contact
Emergency (overdose, seizure, collapse, imminent danger)	**911**
Suicide and crisis, including grief (call or text)	**988**
Crisis Text Line	Text **HOME** to **741741**
Poison Control (including possible acetaminophen overdose)	**1-800-222-1222**

Treatment and information

For	Contact
SAMHSA National Helpline (treatment referral, free, confidential)	1-800-662-4357
Treatment locator	findtreatment.gov
National Drug Helpline (24/7)	1-844-289-0879 (confirm before relying on it)
Local social services, housing, food, legal aid	211 (211.org)
Teen support	Teen Line: 1-800-852-8336

Specific problems

For	Contact
Problem gambling	National Problem Gambling Helpline 1-800- 522-4700; ncpgambling.org/chat
Tobacco quit support	1-800-QUIT-NOW; Smokefree.gov
Domestic violence	National Domestic Violence Hotline 1-800- 799-7233
Confidential help for worrying sexual thoughts or behavior toward others (including children)	Stop It Now: 1-888-773-8368 (confirm before relying on it)

Harm reduction

For	Contact
Naloxone by mail and harm-reduction supplies	NEXT Distro (nextdistro.org)
Drug checking	Local health department or a drug-checking service (availability varies)

Peer and family support

For	Contact
Alcohol	Alcoholics Anonymous
Drugs	Narcotics Anonymous
Alternative to 12-Step	SMART Recovery
Nicotine	Nicotine Anonymous
Sexual behavior	Sex Addicts Anonymous
Partners of people with compulsive sexual behavior	COSA; S-Anon
Families affected by gambling	Gam-Anon

Getting help when money is tight

- Call the SAMHSA helpline or use findtreatment.gov to see what is local.
- Community mental health centers and federally qualified health centers often offer sliding-scale or free care.
- Many states fund treatment programs for people without private insurance.
- Medicaid covers substance use treatment in many states. Ask your state office what applies to you.
- Outpatient medication for opioid use disorder is much less costly than residential care and is clinically appropriate for many people.
- Peer support (AA, NA, SMART Recovery) is free.
- Ask for the right level of care, not the most famous one. The ASAM Criteria match care to withdrawal risk, other conditions, readiness, relapse risk and home safety.

If it is an emergency

- Call **911** first. Name what was taken.
- Opioid overdose: give naloxone, call 911 and stay.
- Thoughts of suicide: call or text **988**.
- Possible acetaminophen overdose: call **1-800-222-1222** before symptoms.